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Designing the Web

designing a quality user experience



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Computer technologies have converged and formed a seemingly infinite, hybrid, heterogeneous virtual space, referred to as cyberspace. It constitutes a digital world of adventure and interaction where new skills, new contents, and new audiences are created. This thesis is, therefore, dedicated to looking at the new modes of thinking that are shaped by this fast-growing medium, both among design professions and throughout society.

The first part of the thesis examines the **landscape of the virtual environment**, dealing with three different but strongly influential and interconnected aspects:

1. **Technological innovation** (How will one medium combine the World Wide Web, interactive multimedia, video games, virtual realities, with traditional media such as books, periodicals, television, and movies? And how will technological evolution inform our ideas?)
2. **Information environment** (What kind of information environment and resources has the global network technology provided us and how will they lead us to a design process and solution?)
3. **Virtual community** (A new social environment is formed and shared by people in the virtual village.)

These three aspects together help us map a clearer vision of what is going on in this globally networked universe. Will the Internet and the interactive multimedia technology enhance the values of design, or vice versa? The question leads to the second part of my thesis: the process and strategies of web site implementation – designing for a quality user experience. I will examine the changing roles played by designers in this new world. Interactive media have introduced a new visual language; however, it is less essential to design a “new look” than to facilitate a new model of thinking required for coping with the new situation. This initiates a great challenge and new opportunities for the designer. A “quality user experience” is what I would consider to be the ultimate goal and solution for website design. All the process and strategies should be dedicated to this criterion.

By “quality user experience,” I mean all aspects of how the users interact with media: how and what they feel when surfing a site, how they understand the functions, and how well the functions fulfil their needs, in the context of social, cultural, global, and technological perspectives. A human-centred design principle will be applied to understand web users’ profiles and their surfing experiences.

Technology makes us expect a better tomorrow. With global networks flourishing and providing us with a changing and expanding terrain for global communications, I believe designers have the ability to offer more than merely “good looking” images. The tasks remaining are to develop a better understanding of human activities, to cooperate with specialists in various fields, and to communicate with society in an active and meaningful way.

Design then will play a central role.

Landscapes | of the virtual world

Things have changed dramatically within the last two decades. With an Internet connection kit and our first email account, there seems to be a world of imagination and new possibilities, waiting for us to explore, to discover and to invent. No matter what happens later in the adventure, with the international infrastructure linking an estimated 30-50 million people worldwide, the Internet and World Wide Web have somehow transformed the way many people think, learn, and communicate with each other. It has created a **virtual space of its own**, shaping our hopes, dreams, and fortunes.

Never before have the technological, social and cultural changes occurred so rapidly and radically. Once we were amazed at the digitized photo techniques, now we use them as we did traditional photo processing and take them for granted. Technological developments in the late twentieth century have reached their fastest progress in history.

These changes represent a rapid and critical evolution in the electronic landscape, but the real revolutionary change of this period has been the Internet and World Wide Web, which represent both a means of communication and a form of information. The new media go far beyond the traditional ones. As a user and a designer, it is on one hand exciting to see this new instrument that combines all the elements in one, but on the other hand, overwhelmed by all the changes and possibilities, we are left with many questions. Will these new media really help us? How will this network culture transform or even replace our old one? How will it change our lives as we put more time, passion, and work into it? As more people take advantage of its global access, will there be an increasing gap between the information rich and the information poor? Will it turn out to be another marketing ploy for increasing consumption? Or just another fancy and entertaining type of TV? What is the designers' role in this new territory that is still under construction?

Faced with all these questions, designers must examine how they are going to adapt and adjust to the new environment. As an editor of Adobe magazine puts it, "Change is inevitable; growth is optional" (Nordling, p. 6). Even if we do not change, the environment keeps changing itself. So, we move ahead...

The Web as a space for **technological innovation**

Douglas Engelbart was a pioneer thinker and innovator in the computing world. Back in the 60s, he was able to foresee the potential influences of computer technologies and hence dedicated himself to working on his “think tool,” which he believed could be used by most people to solve complex problems. His ideas of people cruising through massive amounts of information with “high-powered electronic aids” (Johnson, p. 13) that are efficient and productive because they are intelligent, have found their expression in the greatest innovation of this period – the global information network.

Engelbart’s vision of the information space has enhanced computer technologies in many respects. First, his insistence that computers should make possible the sharing of intellectual tools has become the core idea behind today’s computer-mediated communications technology. The same idea was suggested by Marshall McLuhan, the well-known communications theorist, who believed that electronic information media have brought us together in a “global village” (see McLuhan). Second, Engelbart’s idea of a “thinking machine” that could translate its own language into something humans could understand has made him a father of the modern computer interface.

The notion of transforming all digital information into a visual language that users can understand is a revolutionary breakthrough in human communications with computers. A computer would not be a useful and meaningful tool if it represented itself with only two signals: a zero and a one. On the contrary, computers become important when they have the capacity of interpreting messages with visual languages, known as the graphical user interface (GUI), which was first developed at Xerox’s Palo Alto Research Center in the 70s. Later, Apple developed its “user friendly” GUI, which opened up another revolution in both the computer and design professions.

One advance always triggers another in the history of digital computer development. Human minds keep building on their predecessors’ experiences and efforts. However, it was not until the end of the eighties and the beginning of the nineties that computers gradually became inexpensive, popular tools and began to play an important role in our daily lives.

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virtual community

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The computer's great promise lies in its ability to improve the way humans communicate with each other. Is a computer simply a tool? “Or has it become a global language?” With the Internet and the World Wide Web, which deliver data and services at thousands of bytes per second and connect millions of people twenty-four hours a day worldwide, computers have become tools that many people rely on and cannot ignore.

For designers, computer technologies are involved in everything we do and think about. They have both inspired as well as frustrated us. The fact that computers have become such powerful tools has made designers dedicate themselves to employ their great possibilities and come up with new ideas that will have significant influences in the way we communicate. In this way, we drive technology and ourselves even further.

Virtual Reality

The virtual state that computer technologies generate makes us feel as if we were present in a different time and space. Therefore, the term "virtual reality" is used to describe this contradictory situation. Levy, in his book *Becoming Virtual* examines the difference between the real and the virtual. According to him, the "virtual" normally implies something lacking physical existence, whereas the "real" implies something concrete, "a material embodiment, a tangible presence" (Levy, p. 25). However, the virtual promises its possibilities in the future by evoking a process that involves inventing new solutions to complex problems, and transforming ideas and relationships within these possibilities. Therefore, application developers produce programs, which are real, from the possible, and those who use the programs reveal new questions, define new problems and thus create a new dynamic interaction between the two. Having done so, the virtual creates its own reality (Levy, p. 27).

Brenda Laurel in her article "the Cybernetic Frontier" (p. 182) talks about the perception of "virtual reality". She proposed the key components of experiencing the virtual space:

- Immersion and the sense of presence: Users get a sense of presence from a sensory field that mimics the real world.
- First-person point of view: Users experience virtual spaces from a perspective inside their bodies instead of outside them, as opposed to an "artificial reality" in which people only see their body move into a place.
- Individual viewpoint control: Users can control their viewpoints as they move their head or eyes.
- Multi-sensory interface: Telepresence technology involves at least two sensory modalities in its interface – visual and kinetic senses. Future systems may involve more senses and even have direct connections to the human nervous system.

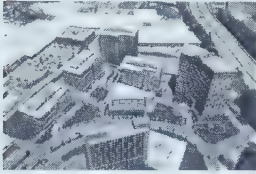
Two kinds of environments are available for access through telepresence technology (Laurel, p. 183):

- Virtual environments: A person can enter a computer-generated world and react within it. For example, we can play a virtual golf game with robotic Tiger Woods.
- Remote environments: Telepresence technologies allow us to experience and take actions in an actual physical environment that is remote in either time or space. For example, we can take a virtual trip to Alaska.

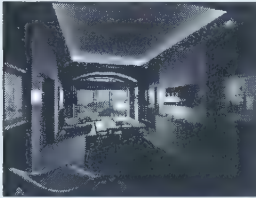
The technology that Laurel mentions above that is used to create "virtual reality" is different from the current one of having computers doing routine tasks in our working and living environments. With telepresence, people virtually live in computers.

It is interesting to bear Laurel's virtual reality in mind while we are trying to look at the WWW. The technology she describes to create virtual reality has not been seen on the Internet due to bandwidth constraints and other technical limitations. However, there is a prediction that in another couple of decades, we will have the technology available. This implies something quite imaginative, doesn't it?

Computer rendering of a 3D environment



1. <http://www.planet9.com/>



2. <http://www.sgi.com/fun/>

Right now VRML (Virtual Reality Modelling Language) is the term for rendering and sharing three-dimensional environments on the Web (👤). With VRML, we recognize that we are still working in front of computer monitors. As opposed to telepresence, there are no input devices to track our bodies. Actually, we are sitting on a chair watching the screen and typing the words. Nevertheless, what happens is that we feel we are moving around within the virtual space, making gestures to our friends all over the world, and talking to them on a real-time basis. Through the Internet, the distance is shrunk and time is squeezed. The experiences are somewhat personal and indescribable. The Web has taken us on an imaginative adventure.

Some people have this virtual world become part of their real one.

They learn to search for what they need, participate in online conferences, and meet those who share the same interests nearby or thousands of kilometers away. If one asks what the most serious "traffic jam" is nowadays, it is not the one on real roads, but the one in cyberspace. Consequently, our perception of the real world is influenced by the virtual, which seems to have created a living world of its own, with its own language, which is complex yet meaningful. The concept of "virtual reality" does exist in some ways on the Web even without the devices defined by Laurel to create people's sensory immersion, individual viewpoints controlled through body movements, or first-person point of view. A new virtual culture is being born via computer networks, which promises the power to change itself and our lives. It also welcomes people to discover and explore the possibilities of its ever-changing environment.

Technology also drives the design world. Designers have tried hard to catch up with the latest new technology in order to find a better way of dealing with problems, communicating with people, and playing a more significant role.

👤 see illustration 1 and 2.

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The Web as a space of **information**

The Internet has brought a revolution in changing our perceptions of the frameworks of information and knowledge.

Information explosion

We have long heard that we live in an "information age" – an "information explosion" actually. With a myriad of information channels such as television, radio, newspapers, films, books, magazines, and junk mail, we are bombarded not just with the information, but also with efforts to make us see, listen and respond. Sometimes we wish to run away from all this but simply can't. Most people have to work with information in today's society.

Advertising images are another sign of the modern information explosion. We probably see thousands of images every day in the cities we live in. No other previous generation in history has encountered such an overload of visual messages, asking us to enjoy a world of "consumer benefits".

One problem with the growing amounts of information is that we also suffer from what is called "**information anxiety**." Richard Saul Wurman describes it as a social phenomenon produced by "the ever-widening gap between what we understand and what we think we should understand" (p. 34). Also, a great deal of the anxiety comes from our limited ability to control production processes. What we can access is actually dictated by a small group of people such as news editors, publishers, and decision-makers in the public and private sectors. He describes sixteen telltale signs of this modern disease, including the following:

1. Chronically talking about not keeping up with what's going on around you.
2. Feeling guilty about that ever-higher stack of periodicals waiting to be read.
3. Reacting emotionally to information you don't really understand – like not knowing what the Dow Jones really is, but panicking when you hear that it has dropped 500 points.
4. Thinking the person next to you understands everything you don't. (p. 36)

We feel the need to keep updating ourselves with the latest news, but sometimes just wish to shut down our sensory feelings. We believe we can get everything in this big consumer age, but often feel lost about what we really want.

Information environment on the **World Wide Web**

The global information technology maximizes the dilemma: on the one hand, we feel that we can do anything on the Internet. Today the Internet transmits data with millions of bits per second on a global scale, and people are expecting to put video conferences, virtual reality, and artificial life onto the Web in a few decades, with real-time communication. But on the other hand, we feel lost and frustrated as though we are wasting our time.

It seems that we are given all the choices: the technology is there, the information is there, and the communication is there. The question is how to get what we want?

In order to answer this question, it is helpful to look at the media from different points of view. First, the Internet is actually a “network of networks,” which means that all computers connected to the Internet are joined together. Thus, it has become the largest information repository, by reaching worldwide audiences and worldwide distribution. As an international networking system, the Internet is a living creature by itself, because it is permanently changing and expanding.

The vast amount of information on the Internet derives from diverse sources: medical system data resources, online library archives, government documents and even daily newspaper articles. If we imagine the Internet as a vast ocean, then we are surfing through countless known and unknown islands. Each island is designated by an address, known as a “URL” (Uniform Resource Locator). Each URL takes one to a homepage with public or personal information. The email account is like one’s virtual address: others may not know where it physically exists because it could be used anywhere in the world.

From this global perspective, information that can be accessed on the Net goes far beyond geographical and physical constraints and the limits of time. A computer in Edmonton can share a hyperlink on an issue on health care with people working in China or get up-to-date news from my country, Taiwan, on its presidential election. In this sense, the views we have are not restricted to local editors or unilateral decision-makers. As we said before, the Internet is a "network of networks;" it doesn't have a "central brain" to control its operation or to enforce a social hierarchy. All computers are equal actors in the exchange of information and communication, which in total creates the universal value of the Internet.

Second, it is interesting to see how this mode of communication has changed the traditional roles played by readers and writers.

Web users play an active and central role, which no longer involves just reading or listening; they are invited to become the **contributors and producers of their own masterpieces.**

Nicholas Negroponte in his *Being Digital* writes that "the Internet is interesting not only as a massive and pervasive global network, but as an example of something that has evolved with no apparent designer in charge, keeping its shape very much like the formation of a flock of ducks" (p. 181). Who is in charge of this vast space. These ducks? I believe it is nobody and everybody.

So far there is no one organization that can say it owns the Internet and has the power to control its development. This is one reason that the WWW has attracted a diversity of people into its free access. And it is the same reason the Chinese government wants to shut down the Internet cafes in Shanghai. Through Internet, people have access to information at a global scale. Surfing on the Net is like window shopping in a mall. You can join a newsgroup and argue strongly for your opinion or you can review different points of view. For users, the Web is about "choices." We want to keep the freedom to use it, yet meanwhile protect it from any nuisances obstructing the freedom we have.

Finally, the Web brings diverse forms of expression such as text, images, sounds, animations, and videos. These offer users experiences as diverse as reading books, listening to music, watching television, playing video games or chatting with friends. Among them, sound and movement, absent in print media, are now playing a critical role in the presentation of the contents. New dynamic features of the Web change our perceptions of the infosphere, giving web designers both a great challenge and new pleasures.

Getting what we want

The Internet, as a medium of dynamic, interactive, and hybrid features has encouraged people to discover, search, and choose what they want, whether it is to share a friendship, to find a specific piece of information, or just to enjoy surfing through the immense resources available.

What we face is an ever-growing information space. For Web users, this often means chaos and detracts from what they usually seek in their surfing experiences. This has raised a crucial issue for most web designers: **how to provide a flexible, diverse and yet well-structured surfing environment with all the dynamic and interactive features through which web users can find the information they want and enjoy surfing.**

Navigation is the term associated with the interface of the information environment on the World Wide Web. It serves as the tool that provides relevant paths to information. To create a navigable interface "requires that we think of information as inhabiting a space that is somehow mappable, in which we locate the information that we need" (Laurel, p. 177). However, as a fertile medium with all the possible expressions in juxtaposition of various media of mass communication, the information space becomes so complex that it's hard for people to create a mental map. The problem gets even worse with the dynamic hyperlink system on the Web.

Thus, studying navigation is not just about the study of menus and buttons, or the visual look of the interface, but about those movements that users make in the virtual space. For users, the questions are: "Where am I?" "Where have I been?" "Where can I go?" "How can I get there?" For designers, they are: "How to provide the users a sense of place?" "How to build relevant and useful paths to information?"

The key is to look at the process of web design at different levels and from different perspectives, which will be discussed later.

“Navigation is about wayfinding,”

says Clement Mok,

"you can't treat it as separate because many other things run parallel with it. If you look at studies in wayfinding, everything from exhibit design to building the cathedrals, it's about creating a complete system" (Fleming, p.3)

The Web as a space for **communication & communities**

The Web has provided us a world-wide channel of communication. In terms of communication technologies, it always involved three modes: information transmission, communication and storage (Jones, p.2). Each plays an important role on the Internet.

Transmission and transportation of information often form our views about communication. We care about the amount of information we can communicate and the economy of communication, which has always been largely dominated by the technologies. Consequently, the role of technology dominates our views in many aspects of life, with a general belief that life will be better with the improvement of technology.

The World Wide Web is derived from technological innovation. However, it has gone beyond being just a cool application, becoming instead a global communication medium that many of us live with nowadays. As more and more people spend considerable time sitting in front of their “cold, bloodless, emotionless” computers, laughing or nodding their head with an understanding smile, a new social space is constructed for more social, political and economic interactions.

Virtual communication

The virtual world has opened up a new arena for **participating in social life**. Besides surfing through the Web as audiences or making contacts with friends in real time, web users can be authors, producers, and designers. In a real world where sometimes we have to disguise our opinions, the virtual one has provided a public realm to “break our public silence” (Fernback, p. 37). For many users, it is safer on the Internet without their physical appearances. They tend to be bolder, more likely to speak out their ideas and fight for their opinions.

If we take ICQ (I seek you) as an example (URL: <http://www.icq.com>), it has become a very popular online chatting tool which allows people to talk to friends in real time, search for friends with certain interests, play games with others, or build their own virtual communities. The largest

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“Life in Cyberspace is more egalitarian than elitist, more decentralized than hierarchical... it serves individuals and communities, not mass audiences...”

– Mitchell Kapor (p. 1.03)

group contains more than 5,000 members (according to their website), and one can find almost any topic or interest group on its networks (if not, you can create one).

It is interesting to see how people participate in a form of public life in the virtual world. The different interest groups in ICQ provides free choices and debates for different users, which envision an “open-minded quality” (Fernback, p. 38) where people of all kinds flock together for different purposes. They may be alone in the physical world, but do not feel lonely at all in the virtual one. They develop their virtual friendships even though they may never see each other.

A friend of mine spends over ten hours a day online, seven days a week, and chats with friends through ICQ. There are about fifty people on his contact list, half of whom he has never met. If I ask him what makes him stay online for so long, his answer is simple: I can make friends of many different kinds. If I ask again why he does not make friends in real life? His answer is even more simple, because he can't. Then I ask what the interesting things are to talk about every day with those ICQ friends he never sees. I imagine that whenever he meets a new friend online, he has to introduce himself again or ask other people the same “personal information” question again and again. He says that it is almost like making friends in real life. They will say hi and introduce themselves a little bit, and then every day they will discuss some new topics, just like chatting between old friends. I still get confused why he would rather make virtual friends. One day, he got an emergency call that urged him to leave for another country immediately for a week. It was late, but he insisted on saying good-bye to his ICQ friends because he didn't want them to worry about him. I then realized that besides sharing interests or exchanging information, the fondness between them ties them closely together and makes this online friendship real.

Sharing and caring are the most important feelings for forming virtual communities. Rheingold describes the sense of vitality and belonging he discovers in online communities: (p. 6)

“An entire cast of characters welcomed me to the troupe with great merriment as soon as I found the secret door... I soon discovered that I was audience, performer, and scriptwriter, along with my companions, in an ongoing improvisation. A full-scale subculture was growing on the other side of my telephone jack, and they invited me to help create something new.”

For Rheingold, the spatial imagery and a sense of place do not fully convey the experiences in the virtual world. The Internet for him is a “social petri dish where all the virtual communities grow like colonies of micro-organisms.” It is also a “social experiment that nobody planned but is happening nevertheless.” (p. 70)

Virtual Community

Virtual community emerges on the Internet when “enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace” (Rheingold, p. 5). To many users, the Web has provided a safe and private refuge to escape from the fears resulting from social pressure and mistrust. It also fulfills our intensive desires for fellowship and sense of belonging.

Scholars such as Rheingold, Jones, and Levy all agree that virtual space is a socially constructed place. However, in comparison with the real world, cyberspace allows people to easily overcome the constraints of geographical boundaries and physical and social identities. We are able to speak our voices in the public space yet remain anonymous. We are able to share common interests with the like-minded yet keep our privacy. Jones describes the dilemma of people who are eager for a social life on one hand, but on the other hand have lost their self-identities in the mass society (p. 22). The tension between our inner self and our outer social image is too common a situation in our everyday life. When the real world is commoditized by a culture of consumption and our identities are empowered only by the values we can purchase, the kinds of human associations and sense of belonging we find in cyberspace might not be found elsewhere. The virtual community thus has provided us a means of self-expression and helped us retrieve our self-identity.

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Identities & Sincerity:



Fernback points out that the virtual community that gathers all sorts of users in chat rooms, newsgroups, listserves, or other bulletin boards may serve as an "institutionalized forum for public exchange and debate on an assortment of issues" (p. 38). The "open-minded" quality of cyberspace designed for multiple purposes and multiple users will have all users tolerate the broad utility of the space. There are only rules of social etiquette and "netiquette" to guide them. Virtual harassment and pornographic pictures are the dark side of the free open and public place. Governments start to think of blocking some information and create certain laws to protect other people's legal rights. This leaves us with the question of how free we want the Net to be. We have seen some of the best qualities of humanity on the Internet, where people share interests and aspirations, where people care for and help each other. If the Net belongs to everyone, it is our responsibility to maintain the atmosphere of free expression and communication.

One important significance of network communication lies in its ability to mask the social status quo. Unlike the real world where appearance and position are highly visible and "visual", our personal identity in cyberspace is not revealed and extended by our visible image, but somehow by our knowledge that can be shared with others. There is a welcome gesture provided by the Net that invites everyone to be the master of himself. Web users can be readers or consumers when surfing through newsgroups or the World Wide Web or they can be authors and producers of their own messages. With the lack of physical references, people tend to feel more free to express themselves.

In addition to longing for personal identities, cyberspace provides us with a medium for developing multiple identities and multiple realities. Like the comic illustrated (8), nobody knows who the other side really is. In a sense, everyone is in the dark. Rheingold notices that this abundant medium has allowed people to experiment with "multiple simultaneous personae in different neighbourhoods" (p. 61). Once one is on the Internet, one has the means to remain anonymous in the conversation, or play around with different characters invisibly since the human body is obscured by another full body of texts and letters.

It is easier to adopt a role because of the invisibility. One could present himself as he really is, or as what he wished to be, or as what he could never possibly be in real life. Like a creator of his own character, he can choose to be a young millionaire in Monte Carlo, while actually he turns out to be "she", an 80-year-old grandma searching for company.

This fact has made online relationships a little bit confusing for people who quest for sincerity of communication. It is getting more familiar to hear someone claim he has found true love on an online club. However, not everyone feels ready to open his heart to a stranger. If common interest and human relationships are the main reasons to form a virtual community, then the lack of serious commitment is probably the most worrisome part for its future development. As Rheingold questions, "are relationships and commitments as we know them even possible in a place where identities are fluid?" (p. 60) However, as we mentioned, the caring and sharing people carry onto their online communication and communities are the decent qualities of human relationships that make virtual communities real and worthwhile.

The new communication technology restructures a social landscape. For some, the experiences they have in cyberspace are a new form of public contact and a new sustenance of social and individual identity. It is a place that constructs new possibilities, that may fulfil our desires and adds our imagination onto it. The Internet represents a technological innovation, yet what it reflects and evolves inside is a vision of a human life, a place where people participate in a non-physical form and where social interactions are constructed, the virtual place becomes meaningful to us.

As a space of technological innovation, information, and virtual communication, one imagines the fertile yet weightless world of the Web:

"No two snowflakes are alike. But to our luck, they don't come down heavy with meta-tags. Yet snow's unpredictable behaviour, its different speeds, its whirl and float, its temporariness, its habit to turn into water, or ice, informs our sense, only to promote diversity and attention." --Jouke Kleerebezem
(<http://www.ciw.net/D=1/>)

As both a designer and a user, it is the beauty I want to catch, and in turn provide users a beautiful and high quality surfing experience.

A User-centered

design approach | designing for quality user experiences

The Internet and the World Wide Web have presented us with an interesting and ever-growing global information infrastructure by binding together three strands: technology, communication, and information.

- The web constitutes a virtual space in which people can navigate, find information, and take actions.
- The World Wide Web, as a medium of cross-cultural and heterogeneous forms, takes users on a multisensory journey where many types of expressions are possible. By combining different media and technologies together, the web provides us with a dynamic and interactive multimedia environment which is unprecedented in history.
- The medium opens up new environments for interaction and has introduced new notion toward time and space.
- All messages are ultimately controlled by individual receivers. It is the user who is the master of his searching, choosing, broadcasting, and interacting with other users. The distinctions between writers and readers, contributors and receivers, producers and consumers are now blurred because of the interaction and communication capability of the web, which encourages both sides to be in a continuous process of constructing the contents and activities within cyberspace.

Employing all the resources in this multi-dimensional environment, designers need to have a broader view of design as well as understand the broader impact of design (as the impact of design is more broadly understood). The three aspects (technology, communication and information) will correlate strongly to the web design principles defined later. The challenge emerges a new field of work where users' experience and design disciplines will collaborate closely to create successful web products and compelling user experiences.

Understanding user experience

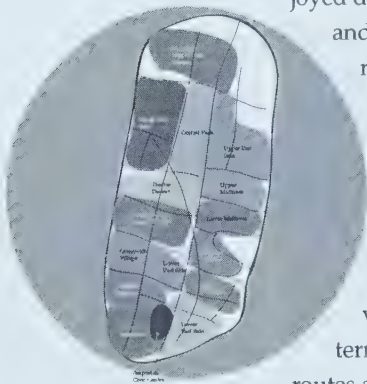
On a mild November day, I planned a trip to New York City. Anything related came to my imagination: its museums and opera houses, famous skyscrapers, locations for movie scenes, theme restaurants, its neon billboards and night life, the various communities from all over the world... I was enthusiastic to know about them all.

The first thing I did was to look for different guidebooks and maps that could help me orient myself. I imagined the places I was going to visit when studying the maps. I was getting to know the city's layout, roads, and transportation systems, and I planned my different routes. "Where to go?" "How can I get there?" "How to connect different routes together and make them relevant?" I asked myself, wishing to visit as many places as I could.

It was exciting to read about so much variety and diversity in one city. After carefully reading through the information I had collected, I organized my trip to New York City into different topic-oriented and area-oriented tours. Both started from Central Park, near where I was staying.

Staying in New York City was an incomparable experience. I very much enjoyed discovering all the different places. Once I was there, the strange signs and buildings were becoming familiar and friendly to me. And the happiest moment came when I had a clear vision of what I could do and learn from this big city.

A powerful idea came to me as a result of my trip to New York City. Navigating the city is exactly like surfing in the virtual world of the Internet. Why couldn't I create a web site that looked and felt like this? Web users will have an adventure in a virtual travel site, which offers them an interesting surfing experience in terms of both information and imagination. The users can decide their own routes and travel by themselves or choose a tour guide; they can play a different character on a trip or just be themselves. These are the metaphors I want to apply to my web surfing experiment, which will be implemented with a lot of interactivity.



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Thinking of how to implement this project was greatly exciting at first. I wanted street scenes with traffic and people, bridges and villages, interaction and dimension. Through surfing this site, users will discover their own maps and routes for their trips, and more important, an interesting navigational method.

Yet unlike the physical world we live in, the web lacks drama. While we talk about all the innovations and possibilities the Internet has brought us, the web's performance is strongly restricted by today's technological limitations. First, there is the limitation in the way we work on a computer with a monitor, keyboard, and a mouse. Second, there is the limitation of its applications.



Technological restrictions:

Resolution: { The resolution of a computer screen can be as low as 72 dpi with only a 16-bit color palette, which indicates that high quality images are not shown on the Internet. Compared to pigment-based, known as cyan, magenta, and yellow, plus black (CMYK), print color with high resolution (newspaper quality: 100 dpi, magazine quality: 350 dpi), computer screens can only handle a smaller range of colors of light, which are primarily composed by red, green, and blue (RGB). The number of colors a designer can use is restricted both by the RGB color and by the bit depth of the monitor on which the work will be displayed. The Web (Browser) safe color palette contains 216 colors out of 256 colors because Macs and PCs have different platforms.

Bandwidth: { Then there is the frustration of the bandwidth that strongly controls the data transmitting and downloading speeds. For a 28.8 kbps modem, to download a 100k image will take about 20 seconds. Waiting on the Internet can be a nightmare. The WWW is sometimes called the "World Wide Wait."

Scripting: { Furthermore, Web designers deal not only with visual and content design, but also with the computer codes known as Hyper Text Markup Language (HTML), a method for coding text and graphics for hypertext on the Internet, or Java Script, a scripting language used to check and process data input by web users through the browser. More interactions may mean more coding and scripting. As a result, designers either have to get familiar with computing languages or work with other specialists such as programmers to create better interfaces for web users.



216 Browser-Safe Color Palette

Typographical restrictions:

Screen & computer setting:

Typeface is another issue for both web designers and users. First, screen typefaces are restricted by the number of pixels on a monitor. Second, they are limited to system fonts and are managed by end-users' font settings. The subtleties that print designers have available for typographic kerning, letterspacing, and aligning are usually not available in a digital design. And because the Mac and PC perform differently, there is a large gap between what designers deliver and what users receive. New Dynamic HTML allows designers to create style sheets that offer more options for typography. However, it is still limited in terms of the subtle qualities of print media.

Reading on screen: {

Reading on screen is also not a pleasant experience for web readers. Since most typefaces are designed to be printed out on a high-resolution printer, they do not suit the low resolution on screen. Especially the coding programs such as HTML and Java Script are not capable of handling advanced typographic settings, which has left designers with a big sense of loss.

Users may also find the restrictions of backlighting and monitor resolution affect their reading on screen. Unlike patient readers of books who do not complain about the same page looks and static visuals, web users usually scan and jump through different pages and need a lot more "eye candies" to keep themselves working on screen.

For designers, the question focuses on what form should screen typography develop for itself. Jonathan Hoefler, who heads the Hoefler Type Foundry in New York, spoke in an interview with Steven Heller that the problems of screen resolution and backlight will have little to do with the final result, but new dimensions such as time and motion will play critical roles to influence online typefaces and readerships (Heller, p. 150).

All the obstacles present designers with fewer options but more efforts and work. It is ironic to see the role that technology played in this medium. The technology that opens up all the expressions on the Web is the same one that limits its capabilities. Nevertheless, the limitations may cultivate the web's own unique style. Here the design challenges come from the technical constraints.

Clement Mok, founder of Studio Archetype says, "We are playing catch-up. Generally, designers are not driving the agenda. The agenda is driven, nine times out of ten, by the tool makers and the manufacturers, but designers can play a very significant role in determining how layout and design can provide a new language and structure on the Web" (Fleming, p. 65).

What designers can offer should not be restricted by the technical constraints. The Web has a lot to offer and a potential to grow. It is about navigation in as many directions as possible. While some aesthetic and perceptual aspects are restricted, the conceptual ones are wide open.

“ Ideas may also grow out of the problem itself, which in turn becomes part of the solution. ”

- Paul Rand

Survey of web users and their surfing experiences

<http://129.128.134.45>

I have begun to think that the best web site designer is probably the **most experienced user** because through using the Net, we determine what we like or dislike. By putting ourselves into users' shoes, we make sure we are not producing web sites which may look fabulous but are user unfriendly, providing many options but difficult to navigate. If users were all the same, things would be easier. But thankfully, the world is rich and beautiful because of the diversity. Web users are made up of various groups with different concerns and interests and they come to the Internet with different needs.

In order to understand the profile of different users, including what kind of surfing habits and experiences they have, what common problems they face, and what expectations they have for designers to meet, I designed an online survey for users' surfing experience. The survey looks at different users' preferences, resources and their browsing behaviours. It is impossible to know everything about every user, but through surveying and interviewing them, I have come to learn their ideas about using the web, which turned out to be a very interesting experience for me as well. Their input has helped me determine basic human factors involved in this activity, identify significant elements for Web design and, later on, create part of a design strategy for this particular medium.

Online Survey Design Principles

According to Jakob Nielsen, who worked as an interface engineer in Sun Microsystems and has published numerous articles on Web usability, surveys are useful to understand web users' subjective satisfaction and their anxieties over their surfing experiences. Many of the aspects will be revealed by simply asking the users. However, since we ask users' opinions of what they feel they like or what they think they do, sometimes they may rationalize or simplify the answers. Therefore, I also conducted interviews with several web users in order to observe how people actually use a site and learn if it works. The departmental site of Art and Design at the University of Alberta was designated as the site for testing usability.

Keep It Simple

Nielsen's theory is that the most important criteria are to let users see the purpose of the survey and keep it short. Too many options or long scrolling questionnaires usually result in early termination. The same problems may occur with multiple pages and open questions. The last point was quite true when I pilot-tested my survey. People tended to ignore the room for write-in options right after "please specify", but focused on those options that were explicitly listed above. It took me several revisions to rephrase the questions till they were "easy to understand and fast to answer."

The first two parts of the final survey are composed of mainly closed questions which query users about either a single fact (such as how many hours they spend on surfing per week), checklists (such as what portion of the Internet they use the most), or rating scales that allow users to evaluate how well they like certain aspects of the Internet or how annoying they find different features.

Even though open-ended questions may not always work well, I put them at the end of the survey to encourage users to explain themselves in more detail. I tried to think of some questions that would stimulate both their interest and imagination.

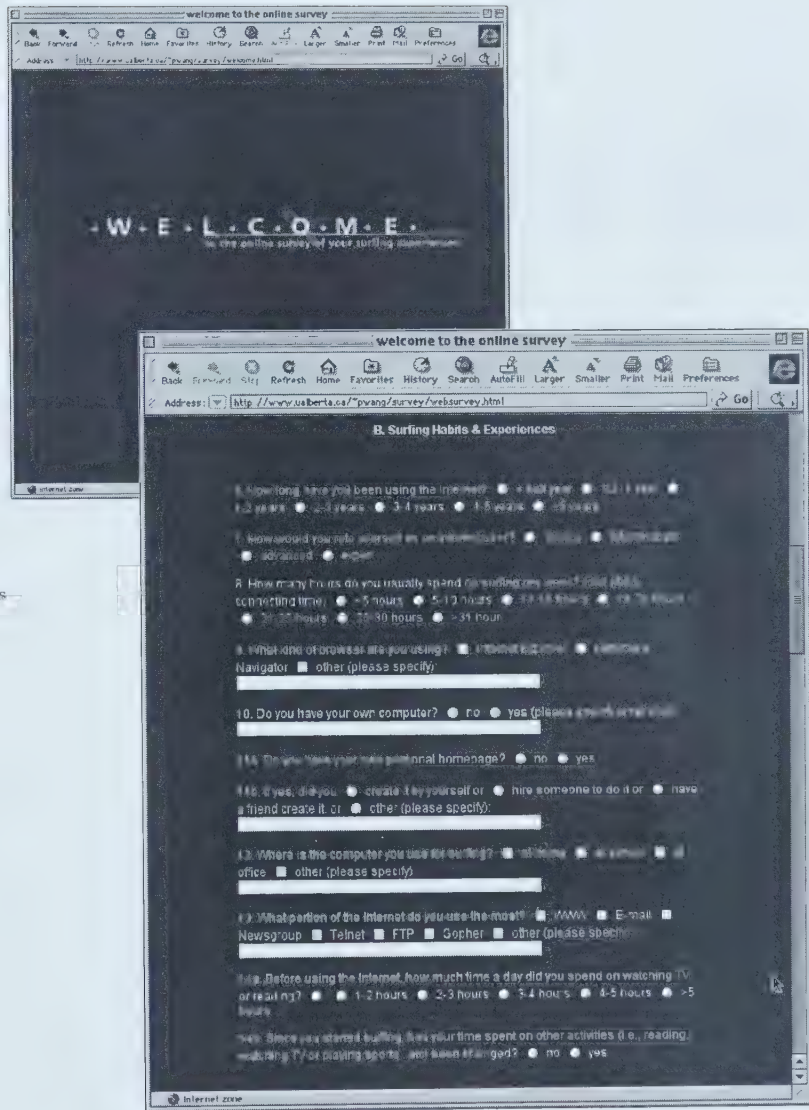
One thing that is important to me but is seldom mentioned is the "tone and manner" of an online survey, both verbally and visually. I tried to state my questions in a neutral way but with a warm visual implementation. It starts with a welcome movie for 10 seconds and finishes with a "thank you" page after users click the "submit" button.

Time:: The survey site was launched on Mar. 15th, 1999 and closed on April 20th. Total 7 weeks.

Audience: I chose U. of A. students as my main audience because they were within easy reach. Besides, students are among the groups who are involved with many activities on the Internet whether they are doing research, exchanging information with others, or just casually surfing. They are also among those who adapt to changes quickly enough to say which features are useful and desirable, and which are not.

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View the questions of my online survey at:
<http://www.ualberta.ca/~pwang/survey/welcome.html>

Survey Data Analysis

A total of 60 people completed the survey, among whom were 30 females and 30 males, 25 Bachelors, 23 Masters, and 10 Ph.D. students. Among the total number, 23 people left their email addresses for further contact for interviews (figure 1).

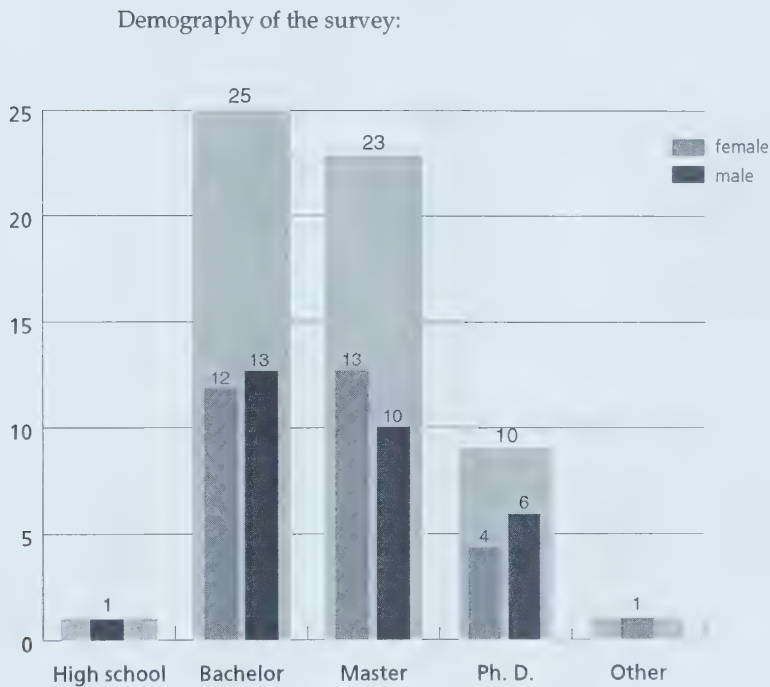


figure 1

Advanced user:

Surprisingly, most people rate themselves as advanced Internet users. But there is no absolute indication from the length of time using the Internet to the degree of how confident one feels about using the Net. Those who rated themselves experts were not the ones who have used the Internet the longest (figure 2).

How would you rate yourself as an Internet user?

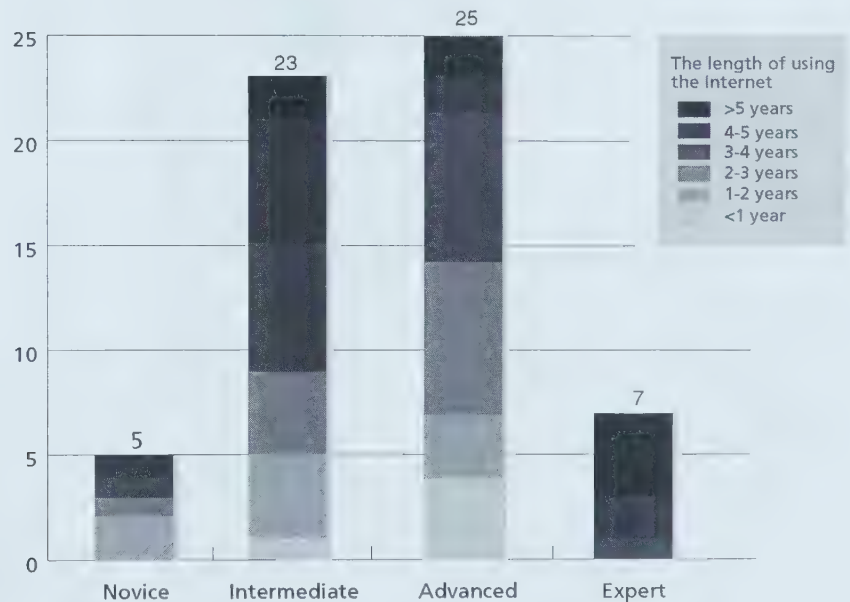


figure 2

Browsers & personal computer:

30 people used Netscape, exceeding the 20 users of Internet Explorer (the other 10 use both of them). No other browsers were used. The rate of having a personal computer is high in this survey; 45 out of 60 have their own computers; among those only 2 use Macs (figures 3, 4).

What kind of browser are you using?

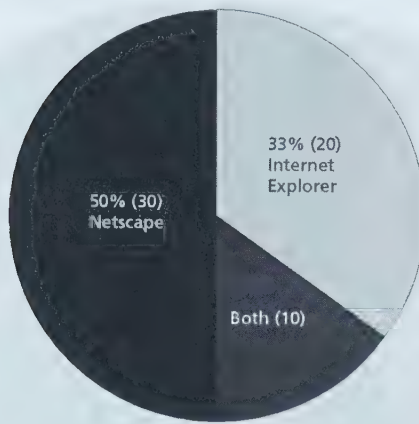


figure 3

Do you have your own computer?

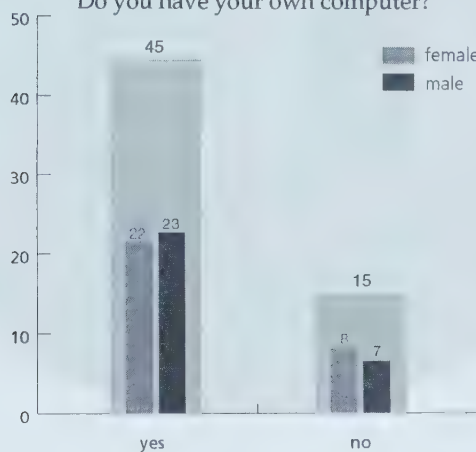


figure 4

Personal homepage:

The survey shows an interesting fact – that 40% of the users have created their homepages by themselves, a result I found surprising. However, this high rate indicates the ease of online publication, and the eagerness of younger people to promote themselves. One user expressed the feeling that having a homepage in the virtual world is like having a home in the real world. He can invite friends from all over the world to visit his little cyber-house showing his personal photos and ideas, which is a source of satisfaction for him (figure 5).

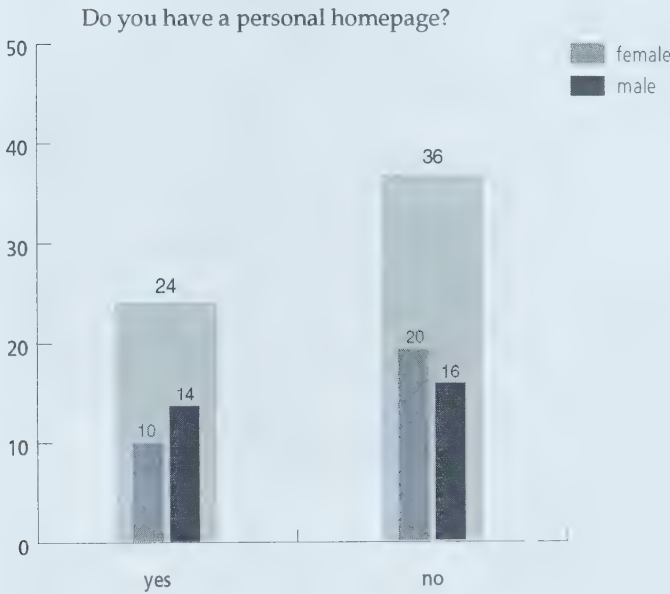


figure 5

Surfing the virtual world at home:

Respondents spend most of their time surfing at home. 63% of users surf at home, then at school (28%), last at office (10%) (figure 6).

Where is the computer you use for surfing?

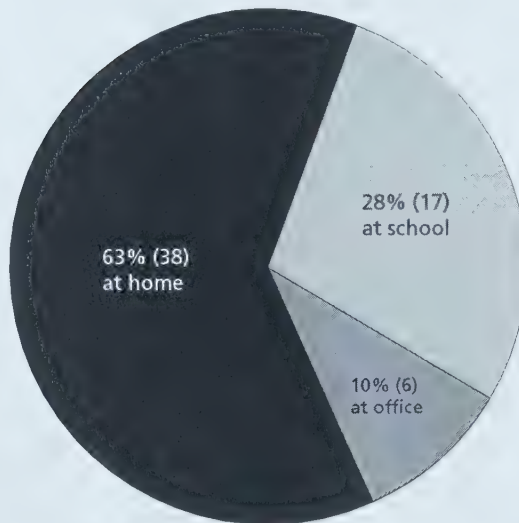


figure 6

What do people do most on the Internet?

According to the survey, the World Wide Web and E-mail are the most popular portions of the Net. However, 9 people mentioned ICQ – an online chat application that allows users to chat with friends in real time or access different interest groups.

The most common thing they do on the Internet is "search for specific information," which is not surprising because the Internet is now becoming the largest resource for information storage and transmittal. For most surfers, the Web has provided a fast, easy, and inexpensive way to reach sources of information that are not otherwise available (figure 7).

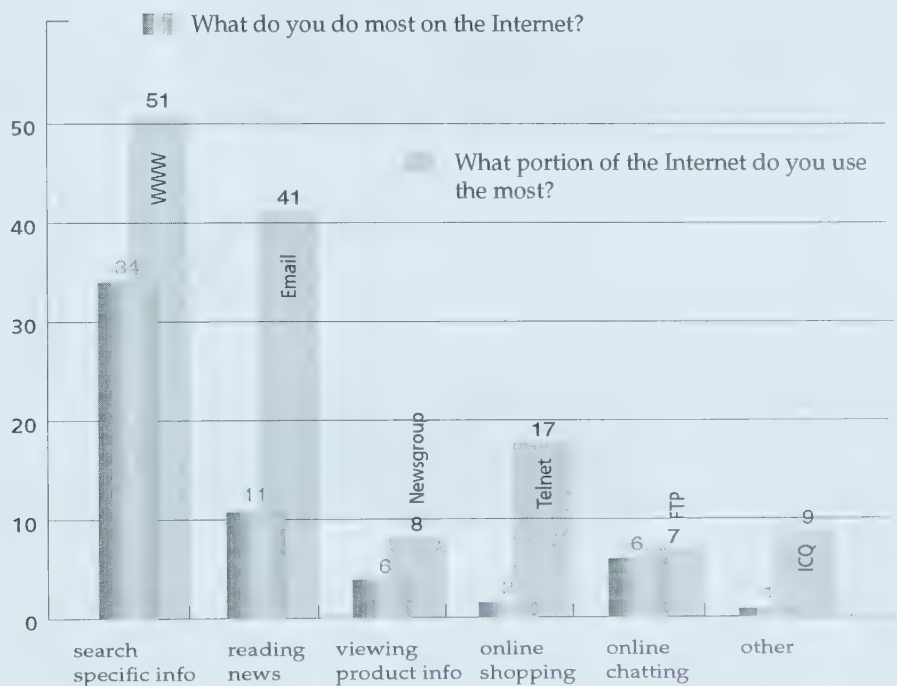
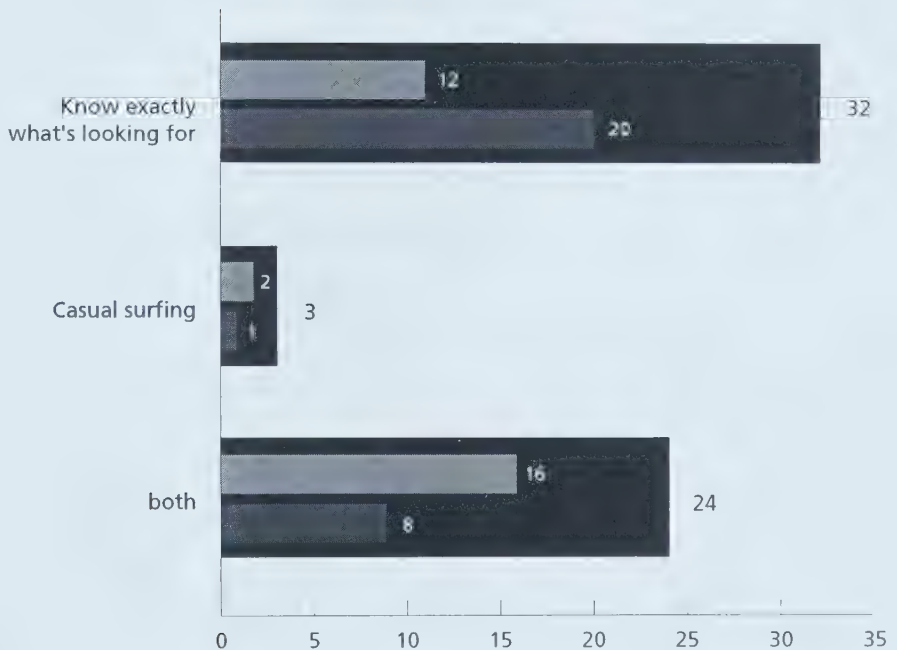


figure 7

Surfing type:

Also notice that with the type of surfing, more than half the users in the survey knew exactly what they were looking for when surfing on the net. 24 people did both specific and casual surfing (figure 8).



Search mechanism:

Search engines are the most used tool (52 users) for finding a specific website related to their interest. Second is "links from famous/favourite sites" (25) and then recommendations from friends. (figure 9)

Usually through what way do you find a specific website that is related to your interest or required information?

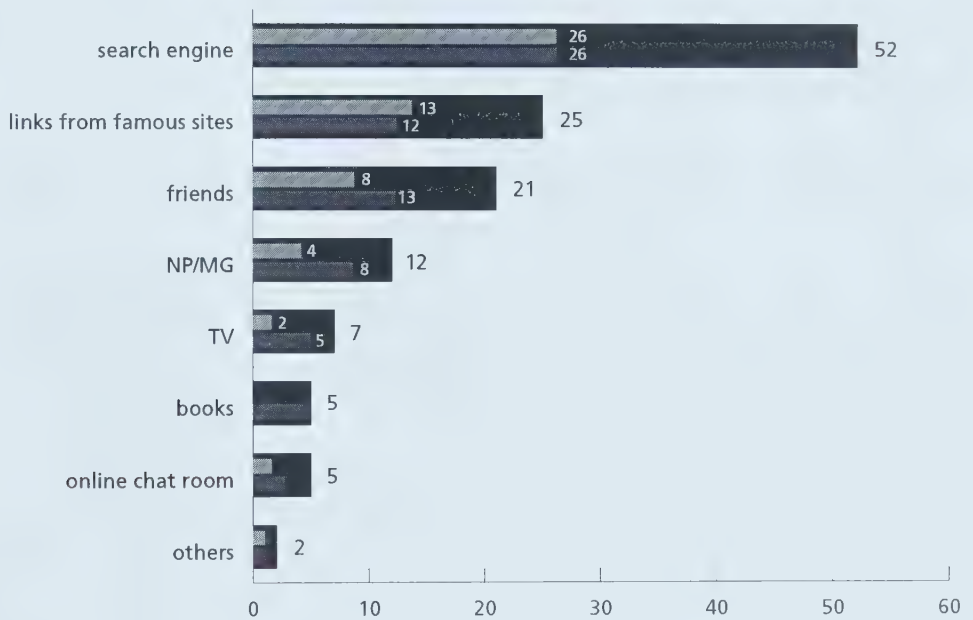


figure 9

Websites visited most frequently:

"On-line news," "academic information," and "search engine pages" are among the types of websites they visit most frequently (figure 10).

On a scale from 0 to 5, what kind of website do you visit most frequently?

	visit most	4	3	2	1	not at all
Online news	18	12	4	5	10	7
Academic information	18	14	14	5	1	4
Search engine page	21	16	6	8	3	3
Online TV/Radio	3	5	3	5	12	9
Online sports	8	2	1	5	7	4
Financial information	4	2	5	7	16	3
Movies/entertainment	5	6	8	9	11	0
Traveling information	3	5	14	9	13	1
Online shopping	2	5	2	3	17	8
Others	8 (ICQ)					

figure 10

Annoying experiences:

Just about everyone knows that using a site has both good and bad aspects. I tried to learn about both the pleasant and annoying experiences users have while surfing. The list of annoying items was collected from my own set of ideas and from some usability studies (Nielsen, 19) (figure 11).

On a scale from 0 to 5, how do you rate the annoyance of the following problems in your surfing experiences?

	very annoying	4	3	2	1	not at all
Delay / speed	31	18	5	2	1	0
Difficulty finding info	16	16	13	12	9	1
Difficult connecting	23	7	6	7	9	5
Bad interface design	18	11	8	3	10	8
Need for plug-ins	18	9	7	6	8	8
Easy getting lost	6	11	9	9	12	10
Reading on screen	4	5	9	8	14	18
Lack of privacy	4	3	5	11	16	17
Lack of security	3	6	10	8	15	15

figure 11

Top 4 annoying experiences:

- ② *Delay and lack of speed* are the most serious problems people feel online, followed closely by difficulty connecting. Bandwidth is the major limitation of today's technology for both users and designers. Even the optimists believe that the speed of the web will have to be 100 times faster in a few years or people will be even more annoyed than now from the long time required to download a large file.
- ② *Difficulty finding information* is the second annoying item. If the Web's strength is the information it contains, then being unable to find a piece of information is probably its biggest sin. However, this is a too-common situation. Users come to a site, which provides no index or site map and even worse has a disorganized navigational system. Consequently, they will leave.
- ② *Bad interface design* leads to a poor interaction between the users and the content, which results from both a poor navigation and visual design. In the graphic environment of the Web, the design has to deal with constructing visual meaning. Designers work with visual cues such as color, position, size, movement, and metaphors to provide users with a guidance and a sensually pleasant feeling.
- ② *The Need for Plug-ins* is also an annoyance. Some sites which are implemented with non-standard software will request users to download different plug-ins. For example, Shockwave movies need Shockwave player, some 3D rendered images will need special plug-ins such as QuickTime player, or WIRL to view virtual reality on the Web. Again, if technologies make the Web do many novel things, it has to do so by giving users what they want, not a Java applet saying "error!"

The top three annoying items in my survey match the top three reasons for leaving a page, as surveyed by Georgia Tech's centre for Graphics, Visualization, and Usability (GVU): pages are slow to download; a site is disorganized and confusing; and users cannot find what they are looking for. (Survey, 1997)

If the survey is true for experienced and skilled web users (over 80% rate themselves as intermediate and advanced, over 40% of these people have created a web page), then the "dissatisfying experiences" that they have are probably the most valuable finding. These results have caused me to think deeply about what it would take to design a "quality user experience."

Interview questions and responses

The interviews and open questions were designed to let users express more of their surfing experiences, and hence help me define the criteria of a good web design later on.

Why keep using the Internet in spite of all the problems?

- “It is the largest source of information available.”
- “The alternatives to getting that sort of information are all time-consuming and most require me to leave my home or visit a library during 'business hours'. In essence, convenience.”
- “I think that I am so used to being online that I can find information faster using the web than if I was to search through a library or even my own bookshelves.”
- “It is an efficient method for literature searches and specific topics.”
- “Every year, a lot of people die in plane crashes. Why do they still take planes???”
- “It is the easiest way to get up-to-date information and keep connected with people in other countries.”

Please recommend the top 2 websites you like or hate most and describe the reasons why you like or hate them.

The ones they like-

• **Well-organized information sites:**

- <http://www.yahoo.com> <http://www.earthlink.net>
- <http://www.wikipedia.org>
- <http://www.ualb.ca>

"Amazon is a great resource to find out what books or CDs are available by a particular artist, or in a particular style even if I do not purchase books or music from them."

"University of Alberta libraries homepage – I use this most frequently to base lit searches and have been quite satisfied with results for the most part. I like its ability to accommodate a variety of search engines and the number of links to various databases across a wide range of disciplines. In general, I have also found the librarians very helpful in dealing with any problems that arise."

"Webmonkey – excellent resource site, well coded by people who understand how to use HTML and design together."

Web users come to the Net to find material of interest, to search for useful information and to keep up with the news. Those sites that offer great and up-to-date resources with an easy-to-find information architecture are a real joy for users, who will visit again and again.

Rich content with good navigational system

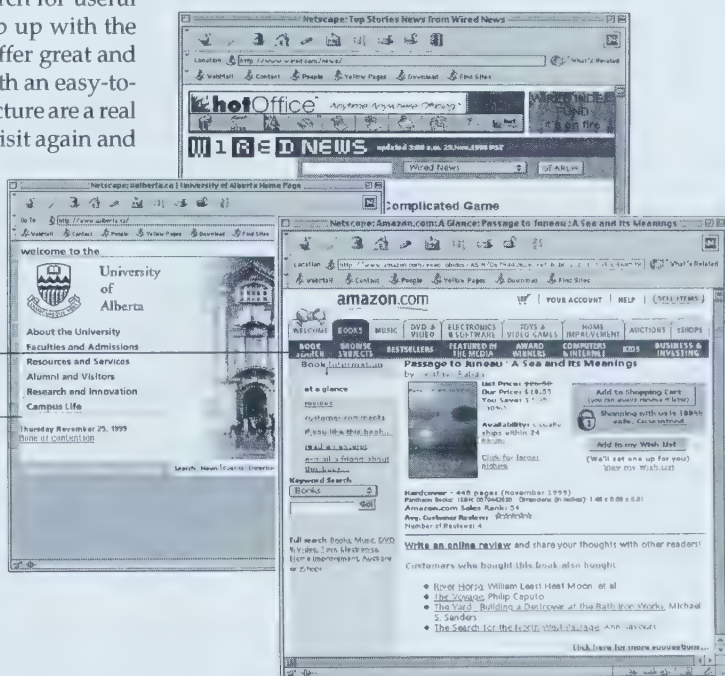


figure 12

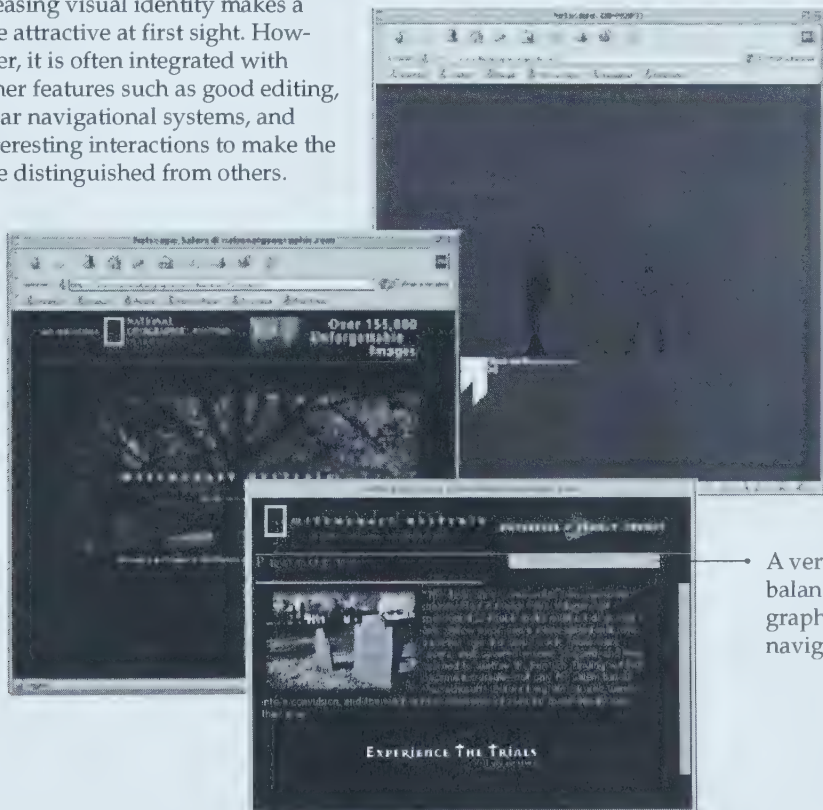
Aesthetically pleasing sites:

<http://www.thedesignersrepublic.com>

<http://www.nationalgeographic.com/feature/07/salmon/>

"It is always new, and I love this design group anyway."
 "Excellent use of current technology and good graphics."

One can like a site simply because it looks good. A consistent and pleasing visual identity makes a site attractive at first sight. However, it is often integrated with other features such as good editing, clear navigational systems, and interesting interactions to make the site distinguished from others.



A very good balance between graphics and navigation

figure 13

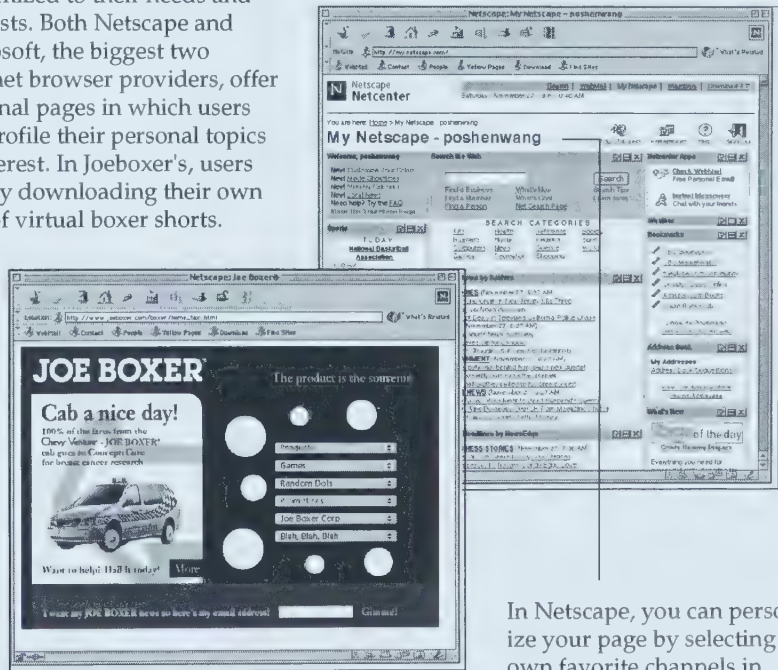
Customized sites:

<http://www.joiboxer.com/>

<http://my.netscape.com/>

"It breaks away from the standard left-hand frame filled with navigation buttons and uses intrigue to get you to enter the site further. You can download your own pair of virtual boxer shorts."

Users increasingly require web sites to offer information that is customized to their needs and interests. Both Netscape and Microsoft, the biggest two Internet browser providers, offer personal pages in which users can profile their personal topics of interest. In JoeBoxer's, users can try downloading their own pair of virtual boxer shorts.



In Netscape, you can personalize your page by selecting your own favorite channels in different categories such as sports, news, weather, and bookmarks. However, the page layout looks cluttered with so much information on it.

figure 14

The sites they hate-

- It is very interesting to see how most people skipped the second question about the websites they hate. I have reason to believe that they do know sites they don't like, but the truth is, why bother with the poor ones? Web users play a central and active role, who 'choose' what they like. They routinely move on to another site if they cannot get a desired piece of information easily and quickly enough. They often give up on a site before its main page fully downloads. Web designers are definitely dealing with a short supply of patience in a world of fast-forward, short attention, and remote control with thousands upon thousands of sites only a click away.
-
-
-

What are the biggest influences the Internet and World Wide Web have had on you?

- **Information**

- "It keeps me out of the library! E-mail communication has greatly facilitated document transfer."
-
- "Although sometimes it is not as smooth as I would like it to be, the integration of different media is exciting. It has made me think in terms of a more multisensory presentation of ideas, information and entertainment."
-
- "Access to the Internet has eased my access to new research and other literature. I can do searches from home in a fraction of the time it would take me in the library, [and] then come in and get material as needed. I can also access websites for other forum of concern or interest to me for research funding or my particular interests."

- **Communication:**

- "I can get an answer to anything almost instantly. I can keep in touch with friends worldwide through e-mail and ICQ. I can keep current with work-related advances."
- "I use e-mail as a primary tool of communication because I move around a lot during the day. I can pick up my e-mail from anywhere when I don't always have a phone available."
- "Being twenty hours away from home, I can still read news and chat with friends there."

- **Employment:**

- "It has made my career borderless."
- "It has provided jobs when the market for print designers became saturated."
- "I can't live without it."

Imagine the year 2020; you are about to enter the computer lab; what will you see?

Many users doubt my premise of having a computer lab in the future, and offer their own vision of a future computer environment.

“My own private room. A comfortable leather recliner with an arm-rest snack machine. A joystick-like controller lets me interact with the room. All four walls and ceiling are projection screens, which can display separate or continuing displays in 2D or 3D. The chair is also linked to the joystick so that it can be rotated around through my directional commands.”

“There will be no keyboards, or mice. Monitors will not be the way we see them now but flat and read more like paper than a TV screen.”

“There won't be computer labs per se. Computers will be everywhere. So there will be computers in most classrooms, in cafes. The technology will be more integrated into everyday life and will be much easier to use. Also, I see keyboards becoming obsolete eventually.”

“I doubt there will be computer labs. I think television, computers, radio, stereos, telephones and similar forms of communication will merge into a single tool that we will have in convenient locations in our home or on our desk at the office.”

“There will not be a computer lab. We will all have a Palm-Pilot-like thing with all the power of today's desktop computers. The screen will be as easy on the eyes as the printed page. There will be no annoying buzz or high-pitched whine. We will be able to do internet-type stuff using cell-phone type technology. The device will also be a telephone, a music player, and a television with access to all the movies and TV shows ever made. The devices will be as ubiquitous as the telephone. Researchers will have access to extremely fast parallel processors that are now available only in a limited way.”

“There will be no computer lab. Personal computers are virtual reality glasses, processors carried on the body, voice and eye-twitch commands, etc.”

“There will be no computers at all. We live in computers by then, like you said, “on screen.” The visuals of something in question appears in the air.”

How do you use the Internet in ways that distinguish you from other users?

"I don't like to surf very much. I find it irritating to sort through all the garbage that is out there. I use it as a resource/reference to find information I need on projects I am working on. Occasionally I will use it for entertainment purposes, but with something specific in mind."

"I have used it to initiate online tutorials by individual e-mail or as part of a list serve with professors in a few subjects, with some success. I have also been able to establish contact and share my work with experts from other countries who contribute to my area of study. There are some online journals that I visit regularly. I belong to a philosophy-working group that conducts some limited amount of debate by email as well as in their group meetings. It is also useful for searching author guidelines for specific journals, and for submitting work for consideration to be published."

"I've used it in an entrepreneurial way. Not only did I start building sites as soon as I got on the Web in mid 1994, but I've used it as a way of reframing the academic knowledge I've acquired in such a way that it becomes a service (business). I also use it to seek out new types of thinking that I can use in my work."

Please finish the following sentence: "Online surfing is like..."

groping in the darkness, throwing out dumb sensors and trying to sift through the chaff you get back for the wheat."

being stuck in a one-sided conversation with a person that annoys the hell out of you."

having the (Western) world's knowledge at your fingertips."

having access to a giant library in which thousands of people are having a big, noisy party."

entering a country with no boundary."

travelling in an exotic and primitive forest."

shopping. Sometimes you like it because it is for you; sometimes you have to so it's like work, and sometimes you go with someone else and you dread every moment."

following a road map with inconsistent and shifting reference points."

meandering through [a] commercial cosmos. Most of it is quite meaningless, but if you recognize the constellations, you can get to where you need to go."

having my brain splitting into infinite pieces.

Survey conclusion

The online survey reveals some interesting aspects about web users and their surfing experiences. Completing the analysis makes me a more advanced web user through understanding their distinct needs and desires. The fact that users are different and have unique interests requires designers to develop a user-centred design strategy.

Furthermore, the result of the survey demands designers to have an interdisciplinary approach, which involves graphic design, information design, programming, marketing, and editing. The one-to-do-it-all method, which existed in the early days of the Web, which was designed, built, and managed by a single individual, has been seen as inappropriate to today. Small websites quickly evolve into large, complex ones that need more content, better organization, and greater functionality. Designers have to team up with other experts such as programmers, editors, or marketing researchers in regard to the needs of the design project.



original image created by: Sean Roy
and Kiki Thomas

Designing for quality user experiences

Web designers should have a broader view of design, not aiming at merely creating “good looking” pages. There is a new mode of thinking involved in dealing with this new online reality. The issues raised for designers fall into three areas: technical design, information design, and interface design, under one core concept –

“ a user-centered design strategy”. (③)

Designing
for quality user experiences

understanding user experiences
survey of web users and surfing experiences
designing for a quality user experience



Layers of multimedia design and human factors

A Web designer who is involved in a multimedia environment has to deal with humans' interactive experiences with computers' digital data. As mentioned earlier, computers can process information quickly with only two signals, while human minds are capable of multi-sensory perceptions involving culture, linguistics, visual cues, and meanings. Designers will have to build a filter, a better interface between a machine's blind codes, which do not reflect human factors, and the human users who, in a multi-sensory environment, handle pieces of information in various forms with different patterns, meanings, and relationships.

■ Interface design:

It presents the graphic look of information in ways that users will best understand it. A good visual design provides not only a strong and consistent identity for the site but also a visualization of what underlies it: the content, structure and technical design.

Working digitally is different from working in print media, which deals with static information within fixed borders. New dimensions such as time and motion play a defining role in presenting content for the new media. These aspects require designers to develop new ways to interact with people on a limited screen.

■ Information design:

The complex information environment of the Web requires designers to work on organizing massive amounts of data into a clear structure or map so that users can find their path to the information they need quickly.

Again, graphic designers have long been working on information structure to bring order to content by using grids, visual hierarchies, layouts, tables of contents, chapters, etc. As a result, there are a set of standards and formats underlying the structures of books, magazines, or newspapers which both designers and readers alike have relied on.

The Web, combining elements such as hypertext, motion, sound, and animation, is about navigating in many directions. A good navigational

design provides users with a well-defined, flexible yet consistent sense of structure.

■ Technical design:

Macromedia announced its new release of Flash 4.0 on June, 1999, which enables designers to produce more advanced vector-based animations and interactions with minimized file sizes on the Web. This has been a common event in the development of web authoring software. Web design inevitably involves programming, but designers are expecting a virtually code-free environment. There exist already some Web editing software programs, such as FrontPage, Dreamweaver, and NetObject, but each seems somehow limited in the way it is set up. For example, NetObject imposes a tree-structure metaphor that allows users to type in the links' names and turn them automatically into a navigational bar. FrontPage needs extra HTML editing to achieve the best possible page layout.

Human factors:

■ Cultural context:

The Web brings communication onto a global scale, which requires designers to broaden their views and understanding of different cultural factors within which messages are perceived. It is easy for designers to assume that the users they design information for share the same beliefs, language and value system. This assumption often leads to misunderstanding and failure to communicate. Icons and metaphors in particular may have entirely different meanings from one culture to another. For example, the symbol of a dragon represents "majesty" and "royalty" in China; however, it symbolizes "evil" in the western world.

■ Cognitive:

The information environment on the Web requires that designers help users create cognitive maps while navigating the ever-changing space.

The task becomes more difficult and more important as data keep accumulating. Besides, the web, as a hybrid medium, brings users the psychological and sensory aspects of diverse experiences such as reading a book, watching television, and listening to music. Web designers determine how they mix these elements and hence present the users an enjoyable surfing experience.

■ Linguistic:

This issue requires designers to consider the language they use to present the content and make sure the intended audiences will not interpret it with confusion. Ambiguity often occurs when different sections of content are grouped together with words or acronyms to label navigational options. The words simply can not state the content in it clearly.

Moreover, we have to agree on which content goes into which categories. It is often difficult to classify certain abstract concepts as either subjects or topics. For example, as one pointed out, should "meditation" be categorized under philosophy, medicine, or religion? Also, the use of language shapes the tone of the messages, and designers should try their best to avoid any bias based on gender, age, race, or religion.

By addressing the design process, I will try to answer the following questions:

1. What is the most effective design process, and how do we evaluate it?
2. What criteria can we develop to arrive at the most effective design process?
3. What kind of strategic thinking and methods of building a site can lead us to a quality surfing experience?
4. How do we know whether we have been successful?

Web analysis framework – designing a quality user experience

I try to develop a broader view of web design from a user-centered design approach. The web analysis framework serves as my methodology of both evaluating a website and designing a new one.

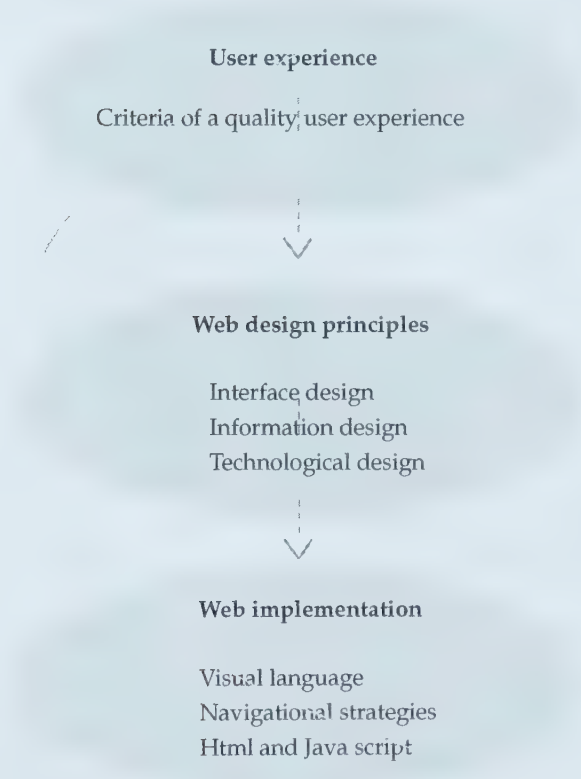


figure 15.

Defining the criteria

It is hard to define the design criteria in such an interactive and multi-dimensional environment. We have discussed the roles played by users who are more like co-authors and co-designers on the Web. Designers have to become users themselves to better understand their joys and frustrations.

The important rule is to look at the whole picture. Are users satisfied with their surfing experiences? Do they find what they need? Does design add value to a broader concept and context?

There is no single rule that can be applied to every web design. Sometimes, people set certain criteria such as “it is better to have a navigational bar toward the top or bottom of the page,” or “navigational map is proved not effective in a hypermedia environment under a non-hierarchical model” (Dias and Sousa, 173). However, just like what they claim, the Web environment is complex with a non-linear organization of the information. The question of where to put a navigational bar or whether a site map is effective depends critically on if the navigational system is well-designed. A site map is a result and presentation of the site’s structure, which provides users with either a directory hierarchy or an outline-like content mapping. Thus, it serves as an option, where designers have to decide whether employing a site map would help users navigate the site. Moreover, good information design includes not only one approach; however, flexible and effective navigation plays an important aspect in a joyful surfing experience.

The criteria, therefore, need to be established from a broad view of design that encompasses all the users’ surfing experiences. It will serve as a foundation of my approach to both designing new online sites and evaluating existing ones.

A quality user experience

> Understanding the user:

Users vary in everything from their browsing behaviours to their computer equipment, from their personal preferences to their various online purposes. The survey is a comprehensive study of the users in advance. It reveals a variety of user-types and a diversity of where, when, and how users surf the Internet, including their different levels of familiarity with the computer and their various expectations towards a successful web site design. A good web design concerns first the people who would actually use the site, and hence support their different browsing mechanisms by exploring alternative navigational tools. Ultimately, the web site delivers contents and services that meet users' requirements.

Understanding the user experience is often the first step and the key to designing a web site that achieves the objectives for each type of user. It is often useful to run some web usability testing before launching the site. Providing feedback inside the site will help designers learn more details about users' surfing experiences and prepare for further updating and improvement.

> Clarifying the purpose:

Before diving into a Web solution, designers should ask themselves if the new medium is the right one to deliver the message. If yes, how will this medium make a different contribution in its own context? People rush to the Web because of its great promises. As a result, we see web sites full of different contents, possible effects, piled-up layers, frames, and tool bars. It is similar to what happens when students first Photoshop. They try every filter on their work, with the result that it all looks very similar from a distance. They forgot whom they were designing for and what ideas they were trying to visualize.

A similar experience on the Web develops when users have to spend considerable time browsing the messages before they reach a clue of what the site is really about. Sometimes it is a typical misunderstanding

between clients and designers, who have too much information about what they know and could offer to think of what users actually want. The Web is already a chaotic environment, and it is a serious challenge to bring clarity to chaos. It is extremely important to know the purpose when designing a site, since site purpose and audience will affect the design approach deeply. Designing a health information site will be different from designing a teenage entertainment site. A clearly defined purpose helps both users and designers know what useful information is available for them and hence bring about some degree of shared communication.

➤ Efficient and effective Navigation:

While it is important to understand the user, the purpose of the site, and provide meaningful and up-to-date content to its users, it is the well-organized and well-designed navigational strategy that delivers the valuable contents to the user.

I use this aspect to examine the degree to which the site allows users to navigate the environment efficiently and locate the relevant information effectively. Navigation, as Romedi Passini, author of the book *Wayfinding* mentioned, is “a new approach to studying people’s movement and their relationship to space” (23). Efficient navigational design reduces the complexity of the environment and makes it easier for users to understand. It is based on a good understanding of the navigational process. Does the site present a sense of place? Does it allow users to trace paths to information easily? Do the navigation and hierarchy effectively support users to form an efficient action plan?

An efficient navigation design also means providing a consistent navigational system across the site. Users get confused and frustrated if they once learn one navigational strategy, only to find they can not apply it to other sections. On the other hand, a predictable and consistent global and local navigation system enables users to visualize the structure of the environment in such a way that they would expect to find desired contents, which is crucial to helping users get around on the Web.

The site map addresses the scope of the site to its users at the beginning, which will save users a lot of time if they know up front what resources are available. Besides, it helps users create a mental map of the site and have them make their decisions easily on which way to go.

Visual guidance is something tied strongly together with navigational strategy and interface design. It includes the use of color, position and movement, graphic images, or even narrators to assist users getting around the site with comfort and cheer. (cf. interface design)

- > Associative learning:

Amazon.com offers a good example of this quality by claiming itself the earth's biggest bookstore to a lot of book lovers. Throughout the site, users find not only a vast database of book titles they search for, but also a flexible and guided space with support for different purposes and behaviour. With this principle, Amazon.com has provided users with

great flexibility in searching the site. Users who know exactly what they want can search by author, title, subject, or keyword. Casual users can look at recommended books in various subject categories, related books or articles under the same topic, or read other professionals in the same field talk about the book. As a result, users of the site gain more knowledge and expand their learning territories through surfing the site.

This is when the information-searching process involves a wonderful experience of associative learning that may allow users to reach better conclusions. And a quality surfing experience comes when seeking and learning cohere at the same time.

➤ Visual language:

If a well-designed site architecture provides a logical structure and a clear organization of information for its users, a good interface design builds the bridge between the users and its contents. It serves as an interpreter and guide to the complex environment of the site; it also bears the burden of offering users an aesthetically pleasing and sensually satisfying experience.

We have seen many sites implemented with great amounts of visual elements battling for attention, but lacking a fundamental ability to communicate. Or on the opposite extreme, there are sites constructed with logical structure but not supported with visual cues and guidance. In either way, confusion and the sense of being lost occur. Therefore, it is when navigation and interface work happily together that a site can provide a cohesive user experience.

A good visual design also gives the site a unique identity from other sites. The Web has allowed designers to play with great diversity in forms and formats. However, this should not be confused with some print design principles. The high-quality images and type in print are not attainable online. Instead, the quality of this new medium creates new forms of life for images and type. Designers are asked to generate new ways of dealing with graphic images and typography, as well as movement and sound. By creatively combining them together, designers transform the “look and feel” of the site into a consistent visual form that extends to the graphic identity of the interface.

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Web evaluation kit

The purpose of the site:

The design approach will depend a lot on the goal of the site and what users expect to accomplish.

- ▶ What is the site's purpose?
- ▶ What tasks do the users have to perform?
- ▶ What are the main issues the site addresses?
- ▶ Did the structure, technical application, and visual design support the purpose?

The audience and their goals:

All performances in the site are to support users' goals. Different audience types lead to different concerns and approaches.

- ▶ Who are the audiences?
- ▶ Is the audience type specific and narrowed down?
- ▶ Are those approaches appropriate for its goal and the intended audience?

Navigation & hierarchy:

The challenge is to provide a flexible, intuitive, and consistent navigational system for the users.

- ▶ What browsers will the design work with?
- ▶ Will it support end users' equipment?
- ▶ Is there a site map?
- ▶ Or can I draw a clear map of the site's structure as we finish navigating?
- ▶ What are the breadth and depth of the site hierarchy?
- ▶ Are the links appropriate?
- ▶ How many steps does it need to get to the relevant information?
- ▶ Are the relationships between pages and components within pages coherent on the site architecture?
- ▶ Is it easy to navigate? Does it react predictably?
- ▶ What features obstruct movement?

- ▶ Is there a "back" option? How will users know where they are?
- ▶ Will "search", "help" option, "guided tour", "feedback," "site map," "quit," and "news" help navigate the site?
- ▶ Does the navigational strategy support the purpose of the site?

Interface:

Each navigational element should be integrated closely to present a useful and effective navigational system for the user.

- ▶ Is the site visually pleasing?
- ▶ Did the interface clearly visualize the paths and navigational system?
- ▶ Does each navigational element say clearly about its supposed destination?
- ▶ Does the interface provide an interesting navigation mechanism? A good and simultaneous interaction?
- ▶ What is unique about the interface?

Content:

The Web brings together various types of information into one space.

- ▶ What are the content elements: graphics, text, video, audio? Do they integrate with each other well?
- ▶ How is the readability? Is the text legible and intelligible?
- ▶ Is the use of icons and metaphors appropriate?
- ▶ Is the use of grammar and acronyms appropriate?
- ▶ Does the content have a special approach toward gender, race, age, or religion?
- ▶ Is the information regularly up-dated?
- ▶ Are the links explicit?
- ▶ How is the text divided?
- ▶ Is there a plug-in requirement? If so, is there an explanation and a link to the download site?
- ▶ Or is there an alternative option for different end-users?
- ▶ Is there an option for printing the content?

Visual elements:

- ▶ What is the tone and manner of the site?
- ▶ Does the visual language communicate well and provide clear guidance?
- ▶ Does the site present a strong visual identity?
- ▶ Does the use of color help differentiate uses?
- ▶ Are metaphors or icons used to advantage?
- ▶ Does the size of the graphics optimize loading time or the opposite?

Trouble shooting:

- ▶ Does the site provide feedback or a help option? Or how do users contact the webmaster if they meet problems or want to ask questions?
- ▶ Does the site need additional software or hardware?
- ▶ Is there a search engine for this website?
- ▶ How is the downloading time?
- ▶ Do the links work well? How many are broken? How many errors occur?
- ▶ Is the site updated regularly?
- ▶ What are other things you feel wrong about?
- ▶ Are there any ways to make them better?

Case Study | Web evaluation and implementation of Department of Art and Design

URL: <http://www.ualberta.ca/~artdesin/>

understanding user experiences
survey of web users and surfing experiences
designing for a quality user experience

Case Study

Department of Art and Design



figure 16

The website of the **Department of Art and Design** was first launched in spring of 1996. Almost four years have passed; the image and contents done with the previous concept and technology happen to provide us with an excellent overview of things that have changed over this period of time.

The purpose of evaluating the departmental site of Art and Design is to create a new framework, a new image identity, and a new online information service with respect to new developments in this media, which will fit into the current demands from the faculty and students. Therefore, I do not hesitate to name the defects in order to enable better redesign solutions. This is not to say that the current design was not adequate when it was new. But changes in web culture, user expectations, and advances in technology make a redesign appropriate.

The site evaluation has been approached through my Web Analysis Framework (figure 15), which started with examining the user experiences and the corresponding web design principles, and aims at designing a quality user experience. In May 1999, I conducted one-on-one interviews with a group of students from our own program (Visual Communication Design) and other departments at the University of Alberta (such as Engineering, Education, Psychology, and Sociology). The interviews provided me with a great chance to collect different thoughts from the users about what they like and dislike about the existing site, its navigational and up-to-date problems, and their inquiries concerning a redesigned site for Art and Design.

There is also feedback from Tanya Sehn, the promotions coordinator in the department, who has given me some insightful ideas relating to this evaluation.

Summary of the interviews

! Can't find the information – confusing structural and navigational strategies

The Art and Design site contains a great amount of information. But it seems users can not find it easily. First of all, some important items such as tuition fees, detailed course descriptions, and faculty members' contact info are missing. Most interviewees asked for an online application form.

Secondly, some of the information is not labelled clearly and properly, which confused users in trying to find the right path to the information they need. For example, the wheel on the main page shows six major sections: art history, design, fine arts, admissions, news & announcements, and Fab gallery. Is there any graduate program? Who would guess there are also industrial design in the Design section and printmaking in the Fine Arts section?

Third, a lot of detailed links are hidden inside a long scrolling block of text, which means users have to search for themselves very hard to find a desired piece. For example, in the Design section, I scrolled for several pages to find the info on graduate programs.

--> A site like Department of Art and Design which contains a lot of information for its users needs to provide a clear, flexible, and efficient navigational system that leads users to the desired information with a quick click. The effort includes **visualizing the hierarchy of the content into a site map**. The site map addresses the scope of the site to its users at the beginning, which will save users a lot of time if they know up front what resources are available. Besides, it helps users to create a mental map of the site and have them ease their decisions on which way to go .

A content-rich site like Department of Art and Design should **divide its content into different categories with clear labels**. Instead of a long scrolling page, the site should gain its usability by providing index, table of contents, or a search facility. Although a table of contents appears at the top of each page, it does not accurately reflect the actual contents of the page.

An application form is the most required item, which I think is something that fits perfectly into the context of the new technology.

! Good graphics but long downloading time

Several interviewees thought the visual presentation of the site is appealing, but it unfortunately requires a longer downloading time. Others complained about the graphic design being flat and excessive.

- > How to balance the efficiency between bandwidth and its graphic elements has been a major challenge for most web designers. However, the main problem here is that a lot of heavy graphic images are not necessarily that heavy. They can be optimized with current technology. For example, instead of importing a gif file for text as a fixed typographic solution, there is a new way of creating style sheets with DHML, which will reduce the file size to its minimum.

More important, the site of the Department of Art and Design is an alter ego in cyberspace. What makes the site unique and representative of the department in addition to the information it could offer is a primary concern with visual design. A site for the department of Art and Design which states the department's strength, specialities, and esthetic philosophy, needs to be particularly distinguished by its unique and consistent visual identity.

Stephen Turbek, the information designer in Razorfish states:

"There is a need to represent the company and to provide information to those who might be interested, but the form it takes is often read as much as the writing it contains. A site has to be both a functional tool and a living manifesto from the company." (Fleming, p. 170)

This is the lively image that the department will try to convey and communicate with the public and what the public be attracted to.

! Undivided and outdated contents

The website has a general reputation for an unfriendly, low, and boring design in its editorial content. It seems like a digital version of the department's print catalogue and a copy of the school's curriculum and calendar book. Generally speaking, it does not speak to the audience so much as lecture them.

There is also the problem that most of the contents are not up-to-date or lack up-to-date information for students or faculty members. To take a simple example, the phone number to contact the department still has the old area code 403, instead of the new one 780.

-> The World Wide Web has a logic and context of its own. For this reason, Art and Design online should by no means just insert data and lists from the print version, but should instead exist as a comprehensive information service.

The effort includes providing constant updates and feedback for users, which assures ongoing interaction and communication between users and web designers. According to Tanya, this has been the most difficult part because often changes occur with no proper people taking care of the editing and maintaining on the site. She suggests that the responsibility should be delegated to appropriate people such as division heads, the Academic Advisor and the Gallery Manager so that they have a closer involvement in the site's development. After all, they are the ones who always have the up-to-date information for the users.

The department should make a decision on how regularly the site is going to be updated. It depends on how often the contents are renewed. For the program section, I think a semester is a proper timeframe for renewal. If we wish to put exhibition info, it needs constant updating according to the gallery's schedule.

The thinking process behind a re-design of online Art and Design

⦿ Goals

Department of Art and Design online namely **Art and Design Online communication and information network** is:

- A site that clearly identifies the department and guides users through forming a visual impression of the department.
- A site that provides information on both academic and other art and design-related news.

Purpose-oriented questions:

- What do I know about the department?
- What can I get from the departmental site?
- How do I find out the information?

⦿ Audiences

Students locally, nationally and internationally who are applicants and wish to learn about admission, or who are thinking of becoming applicants. Those applicants, especially potential graduate students, usually already have specific questions to ask.

Faculty staff inside the department who can use the site for intra-departmental communication. The site will post events taking place in the department such as exhibitions, projects, conferences, etc.

Audience-oriented questions:

- What is the department's philosophy?
- What are the students doing in the department?
- What kind of courses and programs does the department offer?
- Who are the faculty members?
- How to apply?

- What are the costs for tuition fees, living expenses, and house-renting rate?
- Can I get financial support from the department? How?
- How do I contact a professor?

•• Tone and Manner

Since a large percentage of visitors are students interested in applying, the tone of the site should be friendly and encouraging to them, with a fresh, active, and colorful visual tone to communicate with those people.

•• Visual Identity

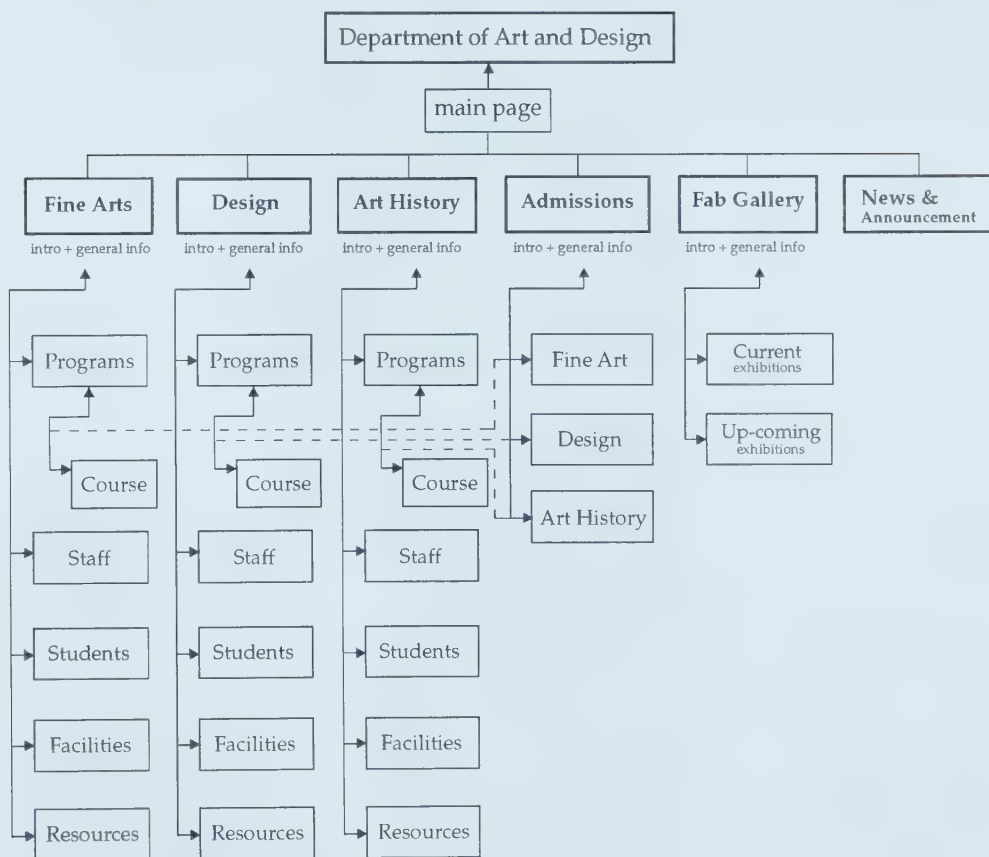
The graphic language should reflect the department's philosophy. The color system based on the 216 colors in the Netscape color scheme will also be used to facilitate its navigational system.



Navigational strategies and Interface

Old structure:

Case Study



Site map designed by:
Aura Beckhofer-Fialho
September, 1996

figure 17

Navigational and Hierarchic problems

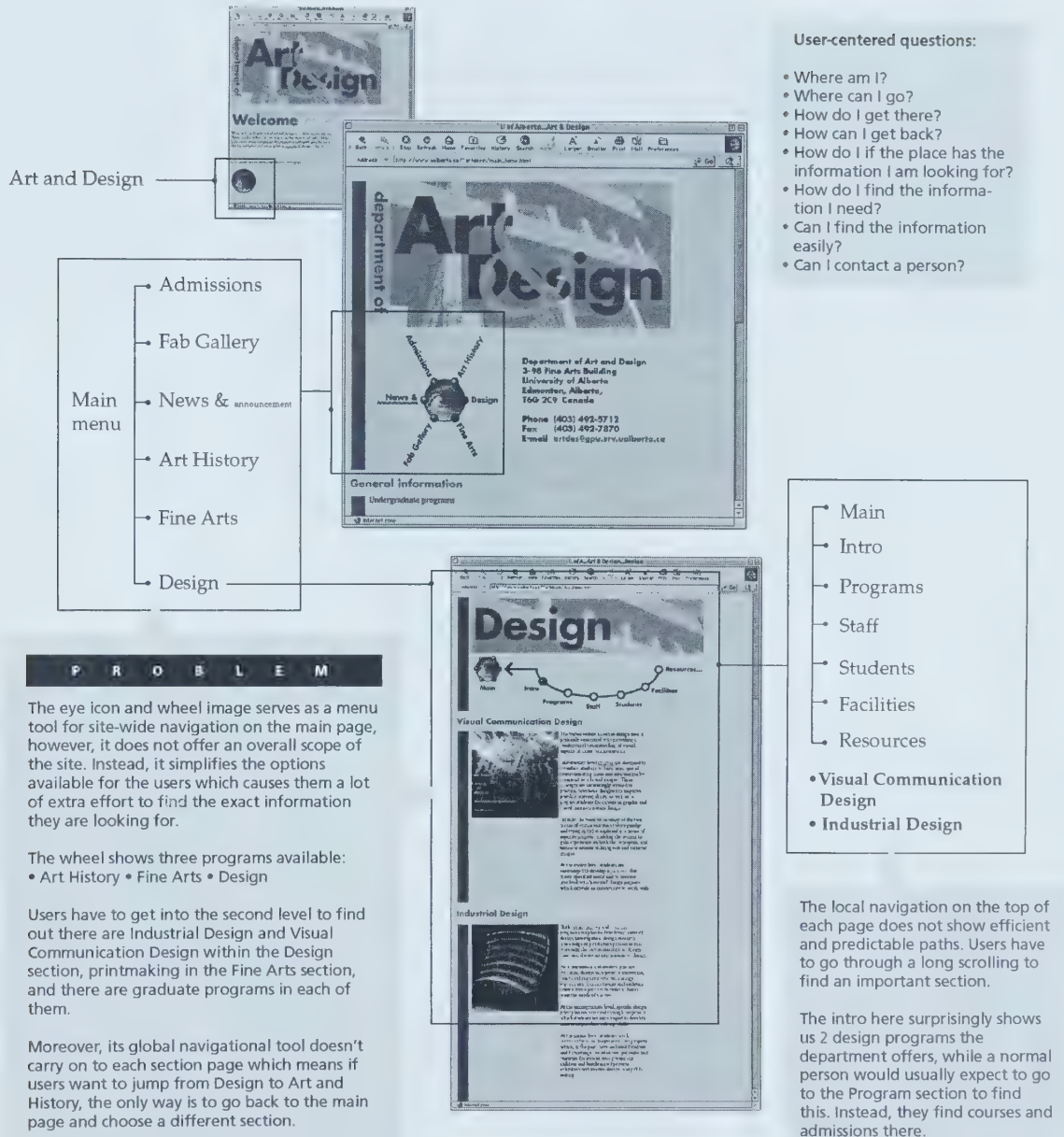


figure 18

New proposed structure of the Department of Art and Design site



figure 19

To conclude:

The new site of Department of Art and Design is dedicated to present a strong and lively identity for the department and serve its users as a mean for two-way information exchange and communication.

The new look will be created based on the department's mission and vision of Art and Design to provide a visual identity and guidance. The new content should be specifically developed and updated on an online and interactive format that allows users to access in a non-linear fashion. The new structure is also mapped to provide users with a more comprehensive and efficient navigational strategy. Finally, the new technologies such as DHTML, JavaScript, Flash, or Shockwave movie are considered to offer the site a more dynamic and interactive experience.

Together the new **Art and Design online communication and information network** will be a useful and user-friendly site that maximizes its usability to its best.

Life goes on; there is no final episode for this webbed story.

I log out of my Internet account, sit back and think of all the changes brought by the new network technology in the last decade of this century. It is a period when human evolution has been bound up tightly with technological evolution.

The computer has by itself evolved into two meanings: first, as a machine, a production of the technological innovation, which reflects new possibilities for human activities; second, as a collective intellectual tool when humankind put ideas, knowledge, and technologies together to enhance their understanding and communication, and in a sense form a computer-based culture of their own.

And it is the second idea that makes the cold, bloodless machines more significant. It is the people who put energy and wits in it that makes the technology a lively form of life.

The new information and communication technology creates a space, a virtual world which potentially can link all people together, where individuals can live in a bodiless, yet social form of life. It is a world which constantly challenges our perspective toward time, space, self identity, and our changing roles. But this time, it is easier for one to control it. The virtual becomes real.

The issue remains how we are going to adapt to the changes – to the new thinking, new contents, new careers, and new technologies. This question leaves all users to think of the future look of the Web and designers a broader scope for design.

In this dynamic landscape of the virtual space, design is for the multiple – multiple dimensions, multiple principles, multiple contents, multiple realities, and multiple audiences. The users, who construct the patterns of using the Net, determine how designers conceptualize and visualize the construction of the space.

Designers will design in collaboration with the users. If the decent human quality we have seen on the Net is the true quality that we would like to maintain and implement, designers will in return provide users with communication and interaction that reflect those qualities. They will work on the new language, structure and skills required by the Web. Together those areas will present users with better communication and design solutions that are both unique and unified.

Conclusion |

{ In this city of digital landmarks, electronic signals, and weightless buildings, designers will become the pathfinders who are involved in every stage of the process of providing a satisfying user experience. }

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Appendix |

Survey form of web users and their surfing experiences

Individual interview consent form

Interview questions



University
of
Alberta

**Department of Art and Design
Division of Design Studies
Ethics Committee**

Project: Survey of Web Users and Surfing Experiences
Principal Investigator: Poshen Wang
Starting Date: March 20, 1999
Ending Date: April 20, 1999

Members of the Department of Art and Design Ethics Committee set up to review the above project, agree and accept on the basis of the enclosed document that the above project conforms to acceptable standards of procedures and aims, objectives and use.

Prof. Jorge Frascara _____

Prof. Peter Bartl _____

Prof. Desmond Rochfort (chair) _____



University
of
Alberta

Department of Art and Design Ethics Review Description of Project and Procedures for Observing Ethical Guidelines

Please provide 2 copies of this document to the Chair, Ethics Committee,
Department of Art and Design.

Project Title: Survey of Web Users and Surfing Experiences

Project Deadlines

Date by which project approval is desired: Mar. 15, 1999

Starting Date: March 20, 1999

Ending Date: April 20, 1999

Applicant

Principal Investigator: Poshen Wang

University Status: Master of Design student completing thesis year

University Address: 3-98 Fine Arts Building

University Telephone: 492-7877

If the principal investigator is a student, please provide the following information:

If the research project is for a thesis or dissertation, has the applicant's

Supervisory Committee approved the project?

Yes No

Name of Academic Advisor (or instructor if a course project): Peter Bartl

University Address: 3-98 Fine Arts Building

University Telephone: 492-7859

Signature of Principal
Investigator. In case of a
graduate student,
signature of faculty
advisor.

Signature of Graduate
Student (if applicable).

Date



Please describe the specific procedures to be used in observing ethical guidelines for research involving human participants. References to the SSHRC Guidelines for research using human subjects are cited below. Researchers should also familiarize themselves with the more detailed discussion in Annex H of the Social Sciences and Humanities Research Council of Canada, "Research Grants: Guide for Applicants." Some granting agencies adopt SSHRC guidelines; others have different guidelines that researchers must follow in making grant applications.

1.Statement of Research Problem and Methods:

(Attach copies of instruments, including tests, interview guides, observational forms, or sample items/questions. In the case of well-known instruments, names only need to be provided).

This is an attempt of mine to do a survey about web users' surfing experiences, which is part of my thesis research on web design and navigational systems. Toward a user-centered web design, the purpose of this survey is to understand the profile of different web users: what kind of surfing habits and experiences they have, what common problems users face, and what expectations they look forward for designers to accomplish. I hope it will help me demonstrate basic human factors involved in this activity and later form a good design strategy for this particular media.

I will use both an on-line survey and individual interview to collect information on how web users think and feel about their current surfing experiences. The method of individual interview will be used to observe user's surfing behavior and will be recorded with video taping. The departmental site of Art and Design will be designated as a site for testing the usability.

2. Who are the participants and how will they be involved in your research?

The participants for individual interview are students from University of Alberta, who used the Internet as an important tool for accessing information. They will be invited to participate in an interview (see attached invitation) where an actual surfing task (based on the departmental site of Art and Design) will be designated to them. They will be video taped through the process to record their surfing behaviors.

They will be asked first to complete a written survey (see attached survey) and then through browsing the site, several questions will be asked based on their using the site (see attached interview questions).



3. How will the nature and purpose of the research be explained to participants?

"Certain individual or collective 'rights' must be maintained. These include the right to know the precise nature and purpose of the research, so that consent may be given or withheld advisedly..." (#8, p. 27)

An opening statement will be read at the start of each focus group session, outlining the purpose of the research, the voluntary nature of participation, the right to opt out at any time, and the confidentiality of the information given (see attached opening statement).

4. How will informed consent of participants be obtained?

"Informed consent should be obtained in writing. Where this is not practical, the procedures used in obtaining consent should be on record." (#14, p. 28)

"Written consent should set out: a) the purpose of the research; b) benefits envisaged; c) any inconveniences; d) tasks to be performed; e) rights of the subject, e.g. the right to withdraw without penalty, the right to confidentiality of personal information; f) risks involved; g) the name(s) of the person(s), group(s), or institution(s) eliciting or receiving the consent." (#15, p. 28)

Individual interviewers will be provided with consent forms. (copies of the consent form to be used are attached). They will in return provide consent in writing.



Survey of Web Users and Surfing Experiences Individual Interview Consent Form

Purpose of the Research

This research project is intended to obtain profile of different web users, whose inputs will help me identify significant elements for web site design and later form part of a design strategy for this particular media.

Benefits Envisaged

This information will be used to demonstrate a better usability strategy for web design.

Tasks To Be Performed

The study requires each participant to complete a written survey and perform an actual on-line surfing task of the departmental site of Art and Design during the interview. The video camera will be used to record the process. Each participant will be asked several questions based on the task.

Rights of the Subject

Participation in this study is voluntary and participants may opt out at any time without penalty.

Inconveniences or Risks Involved

The survey requires roughly half an hour to complete. The interview will take about one hour to complete.

Principal Investigator

Poshen Wang, M.Des. candidate (visual communication design),
Department of Art and Design

I, _____
understand that my participation in this interview is voluntary and that I may opt out at any time. The reasons for the study and tasks to be completed have been explained to me. I understand that I am video taped and permit the investigator to use the tape only for later public showing in her final presentation.

Signature of participant

Date



Opening Interview and introduction Statement

Opening Interview Statement

Thank you very much for attending this interview. My name is Poshen; I am a graduate student in Visual Communication Design at the University of Alberta. This interview is part of my thesis research on web design and navigational strategy. Thanks again for spending time on this survey.

Purpose of the Research

This research project is intended to obtain intelligence on your web surfing experiences and browsing habits.

Benefits Envisaged

Your input will help me identify significant elements for web site design and later form part of a design strategy for this particular media.

Tasks To Be Performed

The study requires you to complete a written survey and an actual on-line surfing task. The video camera will be used to record the process. You will be asked several questions based on the task. Please feel free to talk about any of your opinions.

Rights of the Subject

Participation in this study is voluntary and you may opt out at any time without penalty.

Inconveniences or Risks Involved

The survey requires roughly half an hour to complete. The interview will take about an hour to complete.

Consent Form

At this point I would like you to take a look at these consent forms, which repeat in writing the information I have just given you verbally, and ask you to please sign one of those and return it to me, in order to indicate your consent to participate in this study. The Department of Art and Design is required by the university to keep these forms on file to document the activities of its researchers.

Dear web users, nice meeting you on the web!

This is an attempt to do a survey about your surfing experiences. It is part of my thesis research on web design and navigational systems in Visual Communication Design at the University of Alberta.

The purpose of this survey is to understand the profile of different web users: what kind of surfing habits and experiences you have, what common problems you face, and what expectation you look forward for designers to accomplish. I hope your input will help me identify significant elements for web design and later form part of a design strategy for this particular media.

Thank you very much for spending time on this survey! If you are interested in talking about more details of your surfing experiences, I will be doing a small research project in March and April. Please feel free to contact me anytime: 433-0902 or email: pwang@ualberta.ca

Best regards,
poshen



Survey of Web Users and Surfing Experiences

This survey is intended to collect the profiles of different web users and their surfing experiences, which will help me identify significant elements for web site design and later form part of a design strategy for this particular media.

The survey uses the following convention:

- ☐ choose one and only one
- ☐ choose as many as apply

Personal Information

1. Gender ☐ female ☐ male ☐ NA
2. Age ☐ <15 ☐ 16-25 ☐ 26-30 ☐ 31-40 ☐ 41-50 ☐ >50
3. Education (in progress) ☐ High School ☐ Bachelor ☐ Master ☐ Ph. D. ☐ other
Major: _____
4. Annual Income (individual) ☐ \$ <15,000 ☐ \$15,000-25,000 ☐ \$25,000-35,000
☐ \$35,000-45,000 ☐ \$ >45,000
5. If you want to participate in a small research project, please leave your email address : _____ . I will contact you as soon as possible!
or if you have any questions or concerns, please feel free to contact me at:
pwang@ualberta.ca

Surfing Habits & Experiences

6. How long have you been using the Internet? ☐ < half year ☐ 1/2 -1 year
☐ 1-2 years ☐ 2-3 years ☐ 3-4 years ☐ 4-5 years ☐ >5 years
7. How would you rate yourself as an internet user? ☐ novice ☐ intermediate
☐ advanced ☐ expert
8. How many hours do you usually spend on surfing per week?
(including connecting time) ☐ <5 hours ☐ 5-10 hours ☐ 11-15 hours
☐ 16-20 hours ☐ 21-25 hours ☐ 26-30 hours ☐ >31 hours



Survey of Web Users and Surfing Experiences

9. What kind of browser are you using? ☐ Internet Explorer ☐ Netscape Navigator
☐ other (please specify): _____
10. Do you have your own computer? ☐ no ☐ yes (please specify what kind):

11. Do you have your own personal homepage? ☐ no ☐ yes
If yes, did you ☐ create it by yourself or ☐ hire someone to do it or ☐ have a friend create it, or ☐ other (please specify): _____
12. Where is the computer you use for surfing? ☐ at home ☐ at school ☐ at office
☐ other (please specify): _____
13. What portion of the Internet do you use the most? ☐ WWW ☐ E-mail
☐ Newsgroup ☐ Telnet ☐ FTP ☐ Gopher ☐ other (please specify): _____
- 14a. Before using the Internet, how much time a day did you spend on watching TV or reading? ☐ <30 mins ☐ 1-2 hours ☐ 2-3 hours ☐ 3-4 hours ☐ 4-5 hours
☐ >5 hours
- 14b. Since you started surfing, has your time spent on other activities (i.e., reading, watching TV or playing sports...etc) been changed? ☐ no ☐ yes
15. When you are surfing on the net, do you usually ☐ know exactly what you are looking for, or ☐ most of the time just do casual surfing ☐ both
- 16a. What is your purpose for going on-line? ☐ for personal need ☐ for work ☐ for fun ☐ NA
- 16b. What do you do most on the Internet? ☐ search specific information ☐ reading news ☐ viewing production information ☐ on-line shopping ☐ on-line chatting
☐ NA ☐ other (please specify): _____
17. Usually through what way do you find a specific website that is related to your interest or required information? ☐ search engine ☐ links from some famous websites ☐ friends ☐ through online chatting room ☐ newspaper or magazine
☐ books ☐ TV ☐ other (please specify): _____



Survey of Web Users and Surfing Experiences

18. On a scale from 0 to 5, what kind of websites do you visit most frequently?

- a. Online News : not at all ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 most visited
 - b. Online TV/Radio: not at all ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 most visited
 - c. Movies/ Entertainment : not at all ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 most visited
 - d. Online Sports: not at all ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 most visited
 - e. Travelling Information : not at all ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 most visited
 - f. Financial Information: not at all ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 most visited
 - g. Online shopping : not at all ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 most visited
 - h. Academic information : not at all ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 most visited
 - i. Search engine page : not at all ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 most visited
- other (please specify): _____

19a. On a scale from 1 to 5, how would you rate the annoyance of the following problems in your surfing experiences?

- a. difficulty connecting: not annoying at all ☐ 1 ☐ 2. ☐ 3 ☐ 4 ☐ 5 very annoying
 - b. difficulty finding the information you want :
not annoying at all ☐ 1 ☐ 2. ☐ 3 ☐ 4 ☐ 5 very annoying
 - c. easy to get lost: not annoying at all ☐ 1 ☐ 2. ☐ 3 ☐ 4 ☐ 5 very annoying
 - d. reading on screen: not annoying at all ☐ 1 ☐ 2. ☐ 3 ☐ 4 ☐ 5 very annoying
 - e. lack of security: not annoying at all ☐ 1 ☐ 2. ☐ 3 ☐ 4 ☐ 5 very annoying
 - f. lack of privacy: not annoying at all ☐ 1 ☐ 2. ☐ 3 ☐ 4 ☐ 5 very annoying
 - g. bad interface design:
not annoying at all ☐ 1 ☐ 2. ☐ 3 ☐ 4 ☐ 5 very annoying
 - h. delay/speed: not annoying at all ☐ 1 ☐ 2. ☐ 3 ☐ 4 ☐ 5 very annoying
 - i. need for plug-ins not annoying at all ☐ 1 ☐ 2. ☐ 3 ☐ 4 ☐ 5 very annoying
- other (please specify): _____

19b. In spite of all the problems you experienced, why do you keep using the Internet?

(please specify): _____

20. Do you use a different persona on the Web? ☐ no ☐ yes

If so, please describe it: _____



Survey of Web Users and Surfing Experiences

21. Please recommend the top 2 websites you like or hate most and describe the reasons why you like or hate them.

22. What are the biggest influences the Internet and World Wide Web have had on you?

23. Imagine the year 2020, you are about to enter the computer lab, what will you see?

24. How do you use the Internet in ways that distinguish you from other users?

25. Please finish the following sentence: Online surfing is like ...

Thank you very much for your time!

Please contact me at: pwang@ualberta.ca if you are interested in attending an interview and accept my full appreciation.



Interview on Evaluating the Art and Design Departmental Site checklist

1. Have you ever visited the web site of Art and Design before?
 - a. If yes, how did you find the site address? ☐
 - b. Why did you visit the site? ☐
2. How do you like the site so far?
3. How would you rate the following experiences when you surfed the site?
 - a. the general look of the site: ☐
 - b. the navigational system (paths to find the information you want): ☐
 - c. do you get lost when surfing the site? ☐ ☐
 - f. Have you found the information you need?
 - e. contents and information update:
 - g. downloading time:
4. What do you like most about the website?_
5. What do you dislike most about the website?

Thank you very much for your time! I am looking forward to improve this site as much as I can based on your feedback.

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esigning

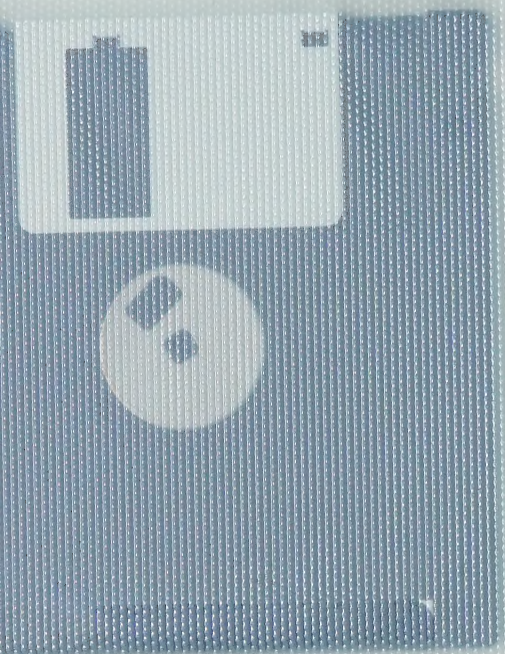


Spring,

**Designing the Web,
Designing a quality user experience**

2000

Master thesis of Poshen Wang
Visual Communication Design
Department of Art and Design



University of Alberta Library



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